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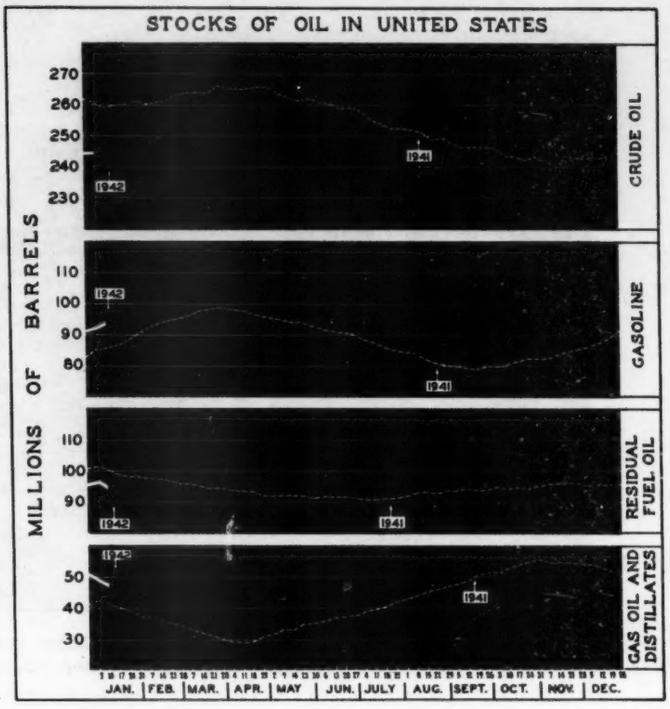
Trends

Varying Opinions As To Importance Of Tire Rationing



WHILE drillers, producers, and suppliers, the first of the week, were hopeful that OPM order P-98 would end delays and make effective a working program for field operations, the industry's statisticians were endeavoring to determine the probable effects of the rubber-rationing program in relation to gasoline consumption. The confusion that exists in regard to basic data is reflected in the fact that opinions of those who have made investigations range from predictions that 1942's domestic motor-fuel demands will continue to show an increase over 1941, to statements credited to OPC's aides who anticipate a 35 per cent drop in civilian gasoline use this year.

CRUDE PRODUCTION *4,252,460 bbl. daily average — up 222,760 bbl. One year ago 3,372,280 bbl.*

CRUDE STOCKS *244,440,000 bbl. as of January 3 — up 450,000 bbl. One year ago 260,643,000 bbl.*

GASOLINE STOCKS *94,204,000 bbl. as of January 10 — up 1,217,000 bbl. One year ago 85,894,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *94,885,000 bbl. as of January 10 — down 857,000 bbl. One year ago 100,553,000 bbl.*

GAS OIL AND DISTILLATES *47,250,000 bbl. as of January 10—down 2,107,000 bbl. One year ago 41,628,000 bbl.*

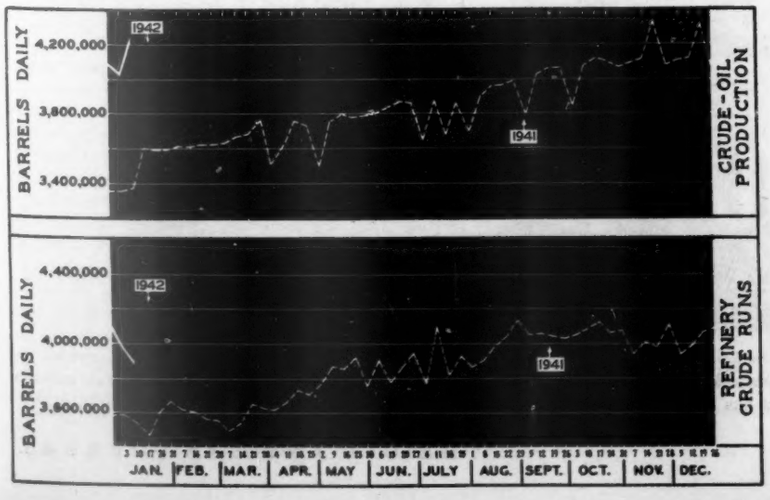
REFINERY RUNS *3,891,000 bbl. daily week ended January 10 — down 70,000 bbl. One year ago 3,543,000 bbl.*

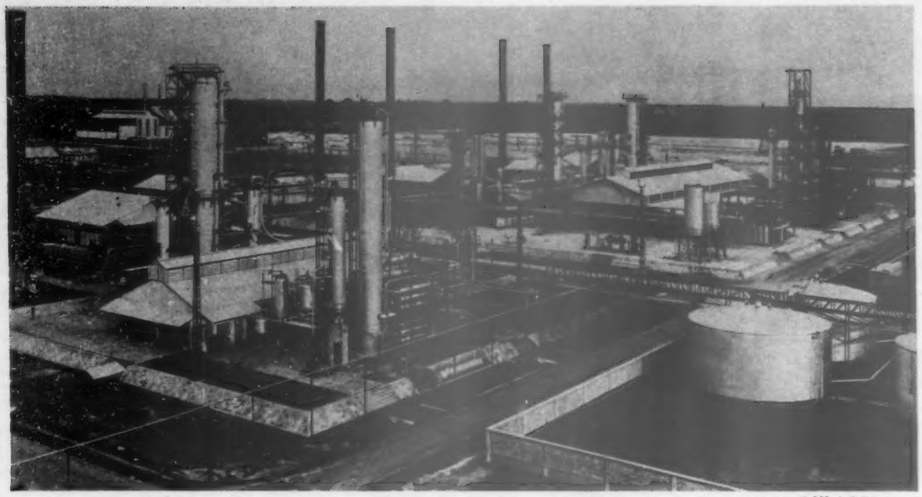
One company with national distribution says this year's gasoline demands will be 5 per cent under 1941. This is predicated on a 10 per cent decrease in car operation and the general adoption of the 40-mile-per-hour limit in driving. A national company predicts gasoline requirements this year will be at least as great as in 1941 and another large distributor is confident increased exports will offset any declines in domestic consumption. Two companies place this year's decline at 8 per cent while a concern which markets over a large part of the United States expects that the decline in tourist business and other developments of tire rationing will bring a large decline in gasoline consumption by next summer.

The wide disparity in these analyses is proof that more information is needed before any accurate projection can be made of motor-fuel demands. Reports from everywhere indicate that consumers started to conserve their rubber just as soon as the rubber-rationing program was announced but bad motoring weather has made it difficult to determine accurately just how this curtailment is being reflected in gasoline purchases at the filling stations. All investigators point out that much will depend on whether or not all shipments of raw rubber from the Far East are stopped and how quickly the production of synthetic rubber in this country can be expanded. In regard to the $400,000,000 construction program for rubber plants announced Monday, refiners the first of the week were inclined to be skeptical as to the completion of the program in 18 months. It appeared that the application of the plan would exceed the 100-octane gasoline program in importance to the petroleum industry. It was predicted that before the rubber construction plan can get under way it will be necessary to conduct an industry-wide survey. This would include properties of crude oil, and a detailed report covering the hydrocarbons to be used in the production of synthetic rubber and now available in limited quantities from refineries and natural-gasoline plants.

DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 10, 1942	January OPC recommended production	January state allowables	Jan. 3, 1942
Arkansas	72,915	73,700	75,689	73,290
California	615,890	646,200	646,200	577,750
Eastern fields	111,100	113,100	.....	112,250
Illinois	381,420	386,400	.....	386,110
Kansas	226,650	259,900	259,900	242,200
Louisiana	361,185	329,300	361,111	361,075
North Louisiana	*82,235*	.....	.....	*82,425*
Louisiana Gulf Coast	*278,950*	.....	.....	*278,650*
Michigan	48,900	47,400	47,400	54,100
Mississippi	75,845	60,400	.....	72,505
Nebraska	5,375	5,600	.....	5,500
New Mexico	118,780	121,200	121,200	118,760
Oklahoma	411,450	415,700	425,000	419,400
Rocky Mountain states	108,850	106,000	.....	112,260
Texas	1,714,100	1,573,500	1,620,659	1,494,500
East Texas	*438,200*	.....	.....	*369,050*
West Texas	*343,800*	.....	.....	*292,750*
North Central Texas	*146,800*	.....	.....	*143,950*
East Central Texas	*93,300*	.....	.....	*87,950*
Texas Panhandle	*91,600*	.....	.....	*87,850*
Texas Gulf Coast	*490,650*	.....	.....	*417,150*
Southwest Texas	*109,750*	.....	.....	*95,800*
Total United States	4,252,460	4,138,400	.....	4,029,700
Total production, Jan. 1-10, 1942			41,856,320 bbl.	
Same period last year			33,669,540 bbl.	





Official Photo

View of the Bataafsche Petroleum Maatschappij (Royal Dutch-Shell) refinery at Pladjoe in southern Sumatra. This refinery now has a rated capacity of 50,000 bbl. per day.

Seizure of the Netherlands East Indies by the Japanese would be a serious blow to those nations opposing Japanese expansion in the Pacific, and would provide the Axis with its first important acquisition of petroleum supplies since the invasion of Rumania. This article analyzes the entire situation, and explains why it is so vital that East Indian oil be denied the invading hordes of the Japanese Army and Navy.

Security of East Indian Oil Important to Allied Victory

By J. P. O'DONNELL

NEW YORK, Jan. 13.—If Japan should succeed in her goal to conquer the Netherlands East Indies and the British protectorates in the southwestern Pacific archipelago, the Axis powers would make their first major acquisition of petroleum supplies since the extension of the war. Mere possession of the fields which extend from northwestern Sumatra to New Guinea, however, would not necessarily assure them the use of the oil for two reasons. In the first place oil fields, pipe lines and refineries have been mined and are to be destroyed in event of invasion. It is estimated that it would require at least 2 years of intensive development to return them to normal production. In the second place it would be necessary to transport crude oil to Japan for processing in the assumption that plans to destroy East Indian refineries are prosecuted successfully. However, much of this sea route would be through easily protected waters once the Philippines and other islands were conquered. Japan has an adequate fleet of 49 tankers, totaling 459,338 gross tons, for this purpose.

Part of Grand Strategy

Some military observers have expressed the belief that the Nipponese invasion of the southern Pacific is part of grand strategical plan of the Axis whereby it hopes to equip itself with oil resources for a war of indefinite length. According to their opinions Japan's drive is linked to a Nazi offensive to be directed at the Near East by way of Turkey. If successful this plan would give the Axis virtually all the oil outside of the Western Hemisphere and Russia but its value to Germany and Italy would be doubtful because of their questionable ability to transport it. The European part of the Axis needs oil, particularly from a quality standpoint. Japan, with a much less developed synthetic industry, is in even greater need. Natural and synthetic production in Japan, Taiwan (Formosa), Sakhalin and Manchukuo and stocks which have been accumulated over a long period are believed to give her sufficient oil for 2 years of war.

Malcolm Rosholt

This location is in the Sourbaya district in eastern Java. Modern equipment is used in East Indian fields, practically all of which are large-company controlled

In view of Japan's lack of oil and her dependence on imports, the ability of the ABCD powers to prevent her acquisition of the Netherlands East Indies may be a vital factor in the war if, as it is predicted, it is to be a long one.

The area which must be defended is vast. From the island of Sabang, northwest of Sumatra, to the border which divides British and Dutch New Guinea the distance is greater than that from New York to San Francisco. The thousands of islands which make up the part of the archipelago under Dutch sovereignty have an area of 753,267 miles. Their population totals 70,476,000 of which 97.5 per cent are natives. Because of their great number and the area over which they extend, the islands are difficult to defend. These characteristics make it necessary to divide the defending forces and at the same time afford an invader a great variety of points to attack.

Gain Oil-Producing Areas

The war is only a month old but the Japs have already gained some of the oil-producing area of the Indies. At the time of writing, their gains had been limited to the three British protectorates in Borneo: Sarawak, Brunei and British North Borneo. The Miri fields (No. 1 on the map) and the Seria fields (No. 2) are in the adjacent states of Sarawak and Brunei respectively. Since the oil produced in both is processed in the Sarawak Oilfields, Ltd., (Shell) refinery at Lutong (No. 3) and since most of the production of both is heavy crude, they are generally classified together. By far the greatest volume, about 90 per cent, is produced in Seria which yields both a light as well as the heavy crude. The oil is delivered to the refinery through a 7-mile line from Miri and a 27-mile line from Seria.

The Lutong refinery's principal product is fuel oil as the 1940 report on Sarawak exports shows. It produced 5,054,000 bbl. of fuel oil, 1,003,-

000 bbl. of gasoline and 398,000 bbl. of kerosene for export that year. In addition to processing Sarawak crude, 6,487,000 bbl. of crude oil were imported. The refinery's capacity is 20,000 bbl. per day. Practically all its products are exported, being loaded on tankers through submarine lines. This refinery was rendered inoperative before its capture and both the Miri and Seria fields were systematically destroyed. Reports that the Japs were getting some oil casts some doubt on the completeness of the destruction but the Netherlands East Indies air force has undertaken to prevent any delivery to Japan.

In their first invasion of the Netherlands East IIndies the Nipponese chose the oil-producing island of Tarakan, just off the northeast coast of Dutch Borneo. This was a logical point of attack for two reasons: It could be approached by way of the Sulu Archipelago extending from Mindanao and it is virtually a part of already invaded Borneo. Tarakan is only 50 miles south of the British North Borneo border. Another danger point is Medan, immediately south of the North Sumatra fields, bombed December 28. It is 150 miles across the Malacca Strait from the invaded Malayan Peninsula. The North Sumatra fields, however, are the most distant from Japan of the scattered Indies fields. Preparations to defend Tarakan had been made and to destroy the wells if the defense was unsuccessful.

Tarakan production, on the decline in recent years, averaged around 10,000 bbl. per day in the first half of 1941. Exports and oil used as supplies for vessels totaled 1,747,000 bbl. in that period. This oil is suitable for use as fuel oil without processing. Oil has been produced on Poeloe Benjoe, another island about 20 miles northeast of Tarakan, but even in its early peak it never exceeded 250 bbl. per day.

The next oil goal of an invader in Borneo would be the Samarinda ~~(No. 6)~~ area in the southeast part of the island along the shores of the Macassar Strait. This area is 250 miles south of Tarakan. It includes the important Sanga Sanga and Sambodja fields which together produce more than 10,000,000 bbl. of oil per year. This oil is processed at the 35,000-bbl. refinery of Bataafsche Petroleum Maatschappij, the Netherlands East Indies subsidiary of Royal Dutch-Shell, at Balikpapan (No. 7). Combined production from the Tarakan and Samarinda fields in 1940 (official government figures for 1941 are not yet available) was 1,793,148 metric tons or 14,006,279 bbl. This represented 22.6 per cent of the Netherlands East Indian production. All commercial production in Borneo is controlled by Shell.

If the Japs strike also at Sumatra as the aerial bombardment of Medan might indicate, they would be striking at the East Indies major fields. Production in Sumatra has been growing for the past 15 years until it was arrested by the war and loss of markets. In 1940 it totaled 5,208,709 metric tons or 40,685,226 bbl. which was equivalent to 65.6 per cent of all Netherlands East Indian oil. In addition more than 50 per cent of the refining capacity is located on Sumatra (No. 8), two of three large refineries belonging to Shell (B.P.M.) at Pangkalan Brandan and Pladjoe and the other to Nederlandsche Koloniale Petroleum Maatschappij at Soengei Gerong at the junction of the Moesi and Komering rivers near Palembang. N.K.P.M. is a subsidiary of Standard-Vacuum Oil Co., formed by Standard Oil Co. of New Jersey and Socony-Vacuum Oil Co., Inc., in 1933. High-octane aviation gasoline has been produced by both B.P.M. and N.K.P.M. since the spring of 1940. The above refineries are rated at 23,000, 50,000 and 45,000 bbl. per day respectively.

Division of Sumatra

Sumatra's established fields are divided into two principal groups, the East Coast-Atjeh group (No. 9) in the north and the Palembang-Djambi group (No. 10) in the south-central area. The East Coast-Atjeh group is controlled almost entirely by B.P.M. Approximately 20 per cent of the Sumatra's oil comes from this area, about 20,000 bbl. per day. These fields would be cut off entirely from the remainder of the island if the Japs made a successful landing near Medan and bisected the island at that point.

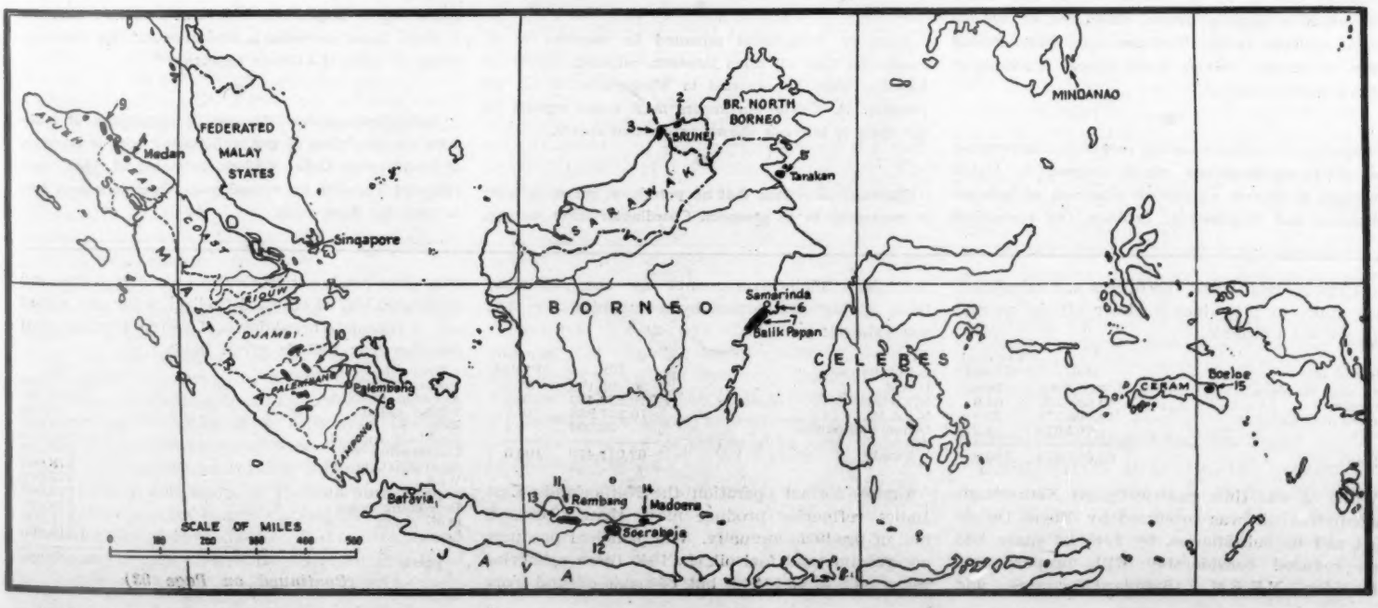
The Palembang-Djambi group constitutes the real backbone of Netherlands East Indies production. The normal production of around 80,000 bbl. per day is more than half of all the oil produced in the archipelago outside of Brunei and Sarawak. The Djambi fields, newest of Sumatra's major groups, lie south of the city of the same name and comprise four or five separate producing areas. Their normal daily production is in excess of 20,000 bbl. They are operated by Nederlandsche Indisch Aardolie Maatschappij, a joint venture of the Batavian Government and Royal Dutch-Shell. There are approximately 20 separate fields in the Palembang group having an aggregate normal production of around 60,000 bbl. per day. They are operated by B.P.M. and N.K.P.M. The Palembang group is directly south of the Djambi fields and west of the city of Palembang. Pipe lines connect both groups with refineries at Pladjoe and on the Moesi near Palembang.

Remainder of Production

The remainder of Netherlands East Indies production comes from Java and Ceram or Molukken. Java's production, normally about 20,000 bbl. per day, like Sumatra's, is obtained from two groups of fields, the Rembang group (No. 11) south of the town of that name on the Java sea coast and the Soerabaja or Sourabaya group ~~(No. 12)~~ west of the port of that name. The greater part of Java's crude is produced in the former group of more than a dozen distinct fields. It is processed chiefly at the 15,000-bbl.-per-day refinery of B.P.M. at Tjepoe (No. 13), 60 miles southwest of the town of Rembang, though there are two other small refineries on the island, a B.P.M. plant at Wonokromo and a N.K.P.M. refinery at Kapoen. Oil has also been produced in the Lerpak field on the island of Madoera (No. 14), northeast of Sourabaya, by B.P.M. The Rembang and Sourabaya production is controlled by B.P.M. and N.K.P.M. Ceram's production, normally about 2,000 bbl. per day, has increased steadily from 1934. It is obtained from the Boeloe field (No. 15) on the northeast coast by B.P.M. Government sources also indicate new discoveries in Dutch New Guinea, where exploratory operations have been carried on by several companies including Shell, Standard-Vacuum, Standard of California and Texas Co. operating cooperatively as Nederlandsche Nieuw Guinee Petroleum Maatschappij. Large concessions have been and are being explored throughout the archipelago by private companies and by government agencies. Typical of the latter is the Australian government oil search in Papua, southeastern section of New Guinea. However, practically all production is from established fields.

A summary of Netherlands East Indies production by islands is given in the following table. Figures in the first column are official

Locations of oil fields in the Netherlands East Indies explain objectives of the Japanese strategy in the southwestern Pacific archipelago



First of five bomb shelters built by Macmillan Petroleum Corp. at its Pacific Coast refinery for protection of workers. Each is 12 by 14 ft. and contains 75 tons of cement and 7 tons of iron in 12-in. walls

Army engineers instructing Macmillan employes in the technique of stacking sand bags

Left: Part of the refinery equipment protected by 50,000 sand bags, affording protection against bomb splinters

This Week...

Prices of Bunker C fuel oil were pegged by OPA at 14 Gulf and East Coast cities. Stipulated prices are 85 cents on the Gulf, $1.25 at Tampa, Fla., $1.30 at intermediate Atlantic ports, $1.35 at North Atlantic cities, and $1.55 at Albany, N. Y.

●

Industry offered up to $400,000,000 of RFC funds with which to develop annual production of 400,000 tons of synthetic rubber from petroleum hydrocarbons within 18 months. Volume would supply two-thirds of nation's normal needs.

●

Operators of natural-gasoline, recycling, repressuring and pressure-maintenance plants ordered to install equipment to recover economical maximum of butanes, isobutanes and isopentanes. Products are earmarked for 100-octane gasoline. All new plants must incorporate equipment for this objective.

●

Crude buyers in East Texas were cautioned against paying or offering bonuses or "other deals" which bring purchasers' costs above November 7 posted levels.

●

Treasury Department repeated its warning to oil companies that all alien interests, whether enemy or friendly, must be reported to Washington, D. C., by January 31. Crude purchasers must make reports on the basis of interests shown on division orders.

●

National consensus that no petroleum rationing plan is necessary or in prospect. Coordinator Ickes agrees, thinks tire rationing obviates any other approach to fuel conservation.

●

OPA gave Virginia and Maryland distributors, adjacent to the District of Columbia, permission to advance tank-wagon gasoline prices 0.5 cent per gallon to equalize a tax differential.

●

The OPM and OPC Tuesday issued the much-discussed and long-awaited Preference Rating Order P-98, extending blanket priority assistance to the oil industry in procurement of supplies. Ratings range from A-10 for marketing to A-1-a for refinery equipment necessary to avert interruption of operations.

●

East Texas Salt Water Disposal Co. organized at Dallas. Engineers instructed to draft proposed order for submission to Railroad Commission, implementing plan to reinject 400,000 bbl. of salt water daily, transfer oil allowable of wells converted to intake service to other properties.

●

Michigan raised per well allowables in several fields, relieving local refineries who were unable to obtain crude requirements under original January order.

●

Revised Rule 37 in Texas requires drilling in center of 40-acre tracts. Pleas for exceptions stack up. Commission's spacing exemptions made contingent on similar action by OPC.

●

Twenty per cent of Texas' crude earmarked as productive of aviation gasoline base naphthas, qualifying under specifications in the OPC Recommendation 28.

●

National production for first 10 days of January is more than 8,000,000 bbl. greater than for same period last year, despite interference with normal drilling imposed by Conservation Order M-68.

●

Refineries throughout the country, particularly the Pacific Coast, turned more attention to blotting out lights, training personnel to operate with blue flashlights. In the fields, as practice blackouts spread, the problem was ways of safely dispersing gas in the atmosphere that is normally dissipated in flares.

●

Amendment to Conservation Order M-68 forces consolidation of the interests in the 40-acre drill site, prohibits use or acquisition of drilling materials until this is done. Same provision is made for unitizing gas properties on basis of 640-acre locations.

●

Prohibitions against the use or acquisition of materials for completion of any well started prior to issuance of Conservation Order M-68 on December 23, 1941, were removed Tuesday by amendment. Operators now free to complete such wells.

---

government data, while the others are calculated. They apply to 1940 since no later official annual data are yet available.

Island—	Bbl.	Per cent of total
Java and Madoera	6,557,295	10.6
Sumatra	40,685,226	65.6
Borneo and Tarakan	14,006,279	22.6
Ceram	762,673	1.2
Total	62,011,473	100.0

While at one time practically all Netherlands East Indian oil was produced by Royal Dutch-Shell and its subsidiaries, by 1940 its share had been reduced considerably with proportionate gains for N.K.P.M. (Standard-Vacuum) and N.I.A.M. (Shell-Government) as the following table giving production by companies for that year shows:

Company—	Bbl.	Per cent of total
B.P.M.	35,495,175	57.2
N.K.P.M.	16,273,453	26.2
N.I.A.M.	10,207,938	16.5
Other companies	34,907	0.1
Total	62,011,473	100.0

Under normal operation the Netherlands East Indies refineries produce more than 50,000,000 bbl. of products annually. The principal products are gasoline and fuel oil. In 1940 these refineries ran a total of 53,104,000 bbl. of crude oil and from that they produced 19,456,000 bbl. of gasoline and 19,868,000 bbl. of residual fuel oil, solar and diesel oil. A complete breakdown of refinery production for the year 1940 is given below:

Product—	Bbl.
Motor gasoline	15,953,000
Aviation gasoline	3,303,000
White spirit	37,000
Kerosene	7,782,000
Residual fuel oil	19,868,000
Lubricating oil	237,000
Impregnating oil	178,000
Wax	727,000
Asphalt, road oil	279,000
Petroleum coke	119,000
Still gases	3,511,000
Losses	1,110,000
Total	53,104,000

(Continued on Page 93)

Industry Given Higher Blanket Priority Rating in Order P-98

By HENRY D. RALPH

WASHINGTON, D. C., Jan. 13.—Materials required by the oil industry for maintenance, and repair and operations, including exploration and discovery of new pools, and research and development of new and more efficient methods of operations were assured today with the issuance of Preference Rating Order P-98.

All ratings higher than A-2 must receive the approval of the director of priorities before they can be used. To apply the rating of A-2 to obtain additives and chemicals used in refining, and the same rating to take care of breakdowns in the transportation branch the permission of the priorities director must be obtained.

All other specific ratings of A-2 and lower must be countersigned by the district office of the OPC. Ratings assigned by the order are as follows:

1. Production:

(i) A-1-e deliveries of material, to an operator engaged in production, which is to be used exclusively for operations directly involved in the search for and discovery of a previously unknown pool or part thereof by means of geological, geophysical or geochemical prospecting.

(ii) A-2 to deliveries of material, to an operator engaged in production, which is to be used exclusively for carrying out by means of an existing research laboratory investigations into more efficient or more effective methods of conducting production operations.

(iii) A-2 to deliveries of material, to an operator engaged in production, which is to be used exclusively for operations directly involved in the search for and discovery of a previously unknown pool by means of the drilling and completion of an exploratory well, including but not limited to the drilling of "slim holes."

(iv) A-8 to deliveries of material, to an operator engaged in production, which is to be used for the maintenance or repair of the operator's property or equipment or which is required as operating supplies.

(v) A-8 to deliveries of material, to an operator engaged in production, which is to be used exclusively in the development and depletion of any pool, including but not limited to material to be used in facilities necessary to or incorporated in well drilling or well completion operations; pumping or other artificial-lifting operations; oil-treating operations; salt-water disposal or injection operations; artificial water drive, gas drive, or air-drive operations; or primary gas cycling or pressure-maintenance operations.

2. Refining:

(i) A-1-a to deliveries of material, to an operator engaged in refining, which is to be used for the repair of the operator's property or equipment when there has been an actual breakdown or suspension of operations and the essential material for effecting the repair is not otherwise available.

(ii) A-1-c to deliveries of that minimum quantity of material, to an operator engaged in refining, which is necessary to make reasonable advance provisions for averting an actual breakdown or suspension of operations.

(iii) A-2 to deliveries of the following materials, to a refinery operator, which are required as operating supplies: Acetone, activated alumina, activated silica gel, aluminum paste, aluminum powder, aluminum chloride, ammonia, carbon tetrachloride, chlorine, copper sulfate, crysallic acid, dichlorethyl ether, diethanolamine, ethylene dichloride, foamite, glycerin, hydrochloric acid, hydrofluoric acid, mercury, metal deactivator (including orthoeresol), methylbutyl ketone, methylethyl ketone, methyl alcohol, nitrobenzine, phenol, phosphoric acid, potassium bichromate, sodium hypochlorite, toluene, triethanol amine, tripotassium phosphate, trisodium phosphate, and zinc chloride.

(iv) A-2 to deliveries of material, to an operator engaged in refining, which is to be used exclusively in carrying out by means of an existing research laboratory investigations into more efficient or more effective methods of conducting refining operations.

(v) A-8 to deliveries of material, to an operator engaged in refining, which is required as operating supplies, other than material acquired as operating supplies as specified in Paragraph (B) (2) (iii).

(vi) A-8 to deliveries of material, to an operator engaged in refining, which is to be used for the maintenance or repair of the operator's property or equipment, other than material acquired for maintenance or repair purposes as specified in Paragraph (B) (2) (i) or (B) (2) (ii).

(vii) A-8 to deliveries of material, to an operator engaged in refining, which is to be used in effecting alterations.

3. Transportation.

(i) A-2 to deliveries of material, to an operator engaged in transportation, which is to be used for the repair of the operator's property or equipment when there has been an actual breakdown or suspension of operations and the essential material for effecting the repair is not otherwise available.

(ii) A-8 to deliveries of material, to an operator engaged in transportation, which is to be used for the maintenance or repair of the operator's property or equipment, other than material acquired for maintenance or repair purposes as specified in Paragraph (B) (3) (i).

(iii) A-8 to deliveries of material, to an operator engaged in transportation, which is required as operating supplies.

(iv) A-8 to deliveries of material, to an operator engaged in transportation, which is to be used in effecting alterations.

4. Marketing.

(i) A-10 to deliveries of material, to an operator engaged in marketing, which is to be used for the maintenance or repair of the operator's property or equipment.

(ii) A-10 to deliveries to an operator engaged in marketing of material required as operating supplies.

Unitization Forced by M-68

WASHINGTON, D. C., Jan. 13.—An amendment to Conservation Order M-68 strengthening control of the petroleum coordinator's office over the oil industry, and specifically providing for unit operation of oil fields, was issued today.

The prohibition against receiving supplies, or withdrawing them from inventory, is removed by the amendment with respect to any case where material is to be used by an operator to complete or provide surface connections for any well in any discovered or undiscovered oil or gas field or condensate field where such well has actually been "spudded" on or before December 23, 1941, the effective date of the original M-68.

With the exception of these three new provisions, the only changes in the amendment are in language.

The following was added to Section 7.

Provided, that no well shall be drilled unless, prior to the actual commencement of development operations at the designated drilling location of such well, there has been a consolidation of all separate property interests within the appropriate 40-acre area surrounding such designated drilling location.

Similar language was added to Section 8 on gas wells.

A new section was inserted reading:

To any case where material is to be used by an operator to complete or provide surface connections for any well in any discovered or undiscovered oil or gas field or condensate field where such well has actually been "spudded" on or before December 23, 1941.

Three Exceptions to M-68-c

WASHINGTON, D. C., Jan. 13.—Conservation Order M-68-c, issued by OPM today, is a blanket prohibition on use of material used in marketing petroleum except under specified conditions.

There are three exceptions:

1. For maintenance and repair as provided in P-98.

2. Where physical work of construction was begun prior to today and is completed within 60 days.

3. Where director of priorities certifies it is necessary for public interest and the war effort; applications for this are to be made to petroleum coordinator on OPC Form PD-215.

Barnsdall Dismissed in Suit

WASHINGTON, D. C., Jan. 13.—Department of Justice has dismissed as to 48 defendants its so-called Mother Hubbard suit against the A.P.I. and 22 major companies and affiliates. Only major company dismissed was Barnsdall Oil Co., Tulsa, which has ceased its integrated character.

PRIORITIES.

OPM Representatives Give Answers to Some Questions Which Have Confused Oil Operators

QUESTION: Have there been any instances of petroleum-equipment requisitioning since this authority was invested in the Director of Priorities for all scarce material?

ANSWER: No petroleum equipment has been requisitioned. However, the Director of Priorities did requisition 13,000,000 lb. of steel bars, plate shapes; 3,500,000 lb. of electrolytic copper; 34,000 lb. of tin and 70,000 lb. of teakwood decking and squares which awaited export to Europe. The materials were turned over to the Navy.

QUESTION: Has a preference order been issued on chlorine?

ANSWER: All chlorine produced in the United States will be subject to direct allocation after February 1, 1942, in accordance with the terms of an amendment to General Preference Rating Order M-19. To facilitate allocation, a new type of requirement is now provided for scheduling orders for chlorine. Regardless of priority ratings, no producer of chlorine may accept orders after the tenth of each month for delivery in the next calendar month without a specific direction from the Director of Priorities. No distributor of chlorine may accept orders after the fifth day of any month for delivery in the following month without specific direction from the Director of Priorities.

QUESTION: Has the Office of Petroleum Management imposed its penalty of invalidating priority assistance to any manufacturer for violation of preference-rating orders?

ANSWER: Yes. Within the past few weeks an Ohio and a Brooklyn, N. Y., firm were denied further privileges under the preference system. All priority assistance of every kind was withdrawn. This means that the companies will not be entitled to the use of a preference rating under General Preference Order P-100 on their needs for maintenance, repair, and operating supplies, nor can they use any other preference rating to which they might otherwise be entitled.

QUESTION: To what extent will suppliers be expected to check up to assure themselves that the purchaser is not using equipment in violation of M-68?

ANSWER: If it can be shown that the supplier actually had positive knowledge that material was to be used for violating M-68, it would be considered proof of guilt. It is not desired that the suppliers police the industry for enforcement of M-68. They do not need to require a statement from the user as to whether M-68 is to be or is being violated.

QUESTION: If a piece of equipment is beyond repair can it be replaced under Preference Rating Order P-98?

ANSWER: Fixed assets may be replaced if they cannot be repaired.

QUESTION: What amount of rubber will be allotted to the petroleum industry?

ANSWER: Uncertain. The situation is unsettled at the present time.

New OPC Materials Division Chief Has Oil-Equipment Background

WASHINGTON, D. C., Jan. 13. — William F. Huff, appointed head of the OPC's new division of materials, has a long record of experience in the petroleum industry both in producing operations and in the supply end. He is a native of Texas but most of his experience in the producing and supply branches of the industry was gained in California.

When relieved of duties as a second lieutenant at the conclusion of World War 1, Mr. Huff served in various capacities in the production of oil and, in 1921, he went to the National Supply Co. serving as assistant sales manager and as western export sales manager.

He left National Supply in 1935 to become vice president and secretary-treasurer of the Better Rubber Co. In 1938, he went to the Petroleum Equipment Co., as manager of tubular sales, remaining with that firm until joining the Petroleum Coordinator's staff a few months ago.

In outlining functions of the new materials division, Ralph K. Davies, deputy coordinator, declared:

"In performing this service for the industry, the materials division will also, in effect, serve the OPM as an 'industrial branch,' specializing in the field of petroleum."

A major function of the new division will be the planning of the most effective use of material, equipment, and supplies required by the oil industry, based on appraisals of necessity and urgency made by the OPC divisions of production, refining, transportation, and marketing.

The division will obtain preference ratings and allocations in appropriate relation to competitive demands, and expedite deliveries consistent with the ratings. It will administer, within the authority of OPC, all oil-industry priority orders which are not directly related to operating projects; administer the review and recommendations on PD-1 requests, in consultation with the other OPC divisions and handle routine control and follow-up of applications for certificates of necessity, in consultation with the other divisions. It will also develop information and statistics on the critical material requirements of the oil industry.

QUESTION: Is approval necessary for drilling on 40-acre spacing?

ANSWER: No.

QUESTION: Can a well be located anywhere on the 40 acres regardless of the offsets?

ANSWER: There is no ruling on this yet but a spacing pattern is being developed. Main thing at the present is to be sure that 40 acres are allotted to the well.

QUESTION: How about an offset obligation under the 40-acre spacing rule?

ANSWER: An application for an exemption from M-68 should be filed and the reason set forth. If it is not granted, the lease owner cannot be sued as the OPM general order attempts to absolve the lease holder from the obligation in cases where he is following OPM orders.

QUESTION: Should the application for exemption from the 40-acre spacing order of M-68 be taken up with the OPC field offices or Washington, D. C.?

ANSWER: At the present applications should be sent to OPC at Washington. As soon as the field offices get into operation, file the applications with them. The field offices are designed for the convenience of the oil companies and the more they are used the more valuable they will become.

QUESTION: Is there a plan in the offing for an overall inventory of oil-field material and a general requisitioning of equipment?

ANSWER: There is no seizure process contemplated for the oil industry at this time. However, there have been a few isolated cases of requisitioning in other industries where there was evidence of hoarding and the building up of unnecessary inventories.

QUESTION: Do suppliers come under P-100 or can they use the Production Requirement Plan for obtaining material?

ANSWER: Suppliers come under either the petroleum plan, which is now P-98, or they can apply through the Production Requirement Branch.

Answers to priority questions presented here were replies of the OPM representatives, who conducted a clinic in Tulsa last week, to the problems of oil operators and suppliers.

James E. Hughes, Washington, D. C., petroleum representative of the OPM, conducted the question and answer session for the oil men attending the clinic.

$400,000,000 Rubber Program Presents Problems to Refiners

By W. L. NELSON

THE refining and natural-gasoline industries will be called upon to supply about 20,000 bbl. of butane fractions daily for synthetic-rubber manufacture if the program of the federal Government as announced in Washington Monday is to go into effect as outlined. This program calls for the expenditure of $400,000,000 over the next 18 months for the erection of rubber plants which will supply the tires, hose, shock absorbers, bands, and the thousands of other war and vital civilian needs now being filled by natural rubber.

Obviously the first step will be to develop an adequate supply of butane and other hydrocarbons from natural gas and cracked gases. This must be done without robbing our supplies in the production of 100-octane aviation gasoline.

Commenting upon the federal Government's plan, Jesse Jones, federal loan administrator, said: "The technical skill of many of the refining and rubber companies as well as their patents have been pooled to insure maximum efficiency and production."

Just where the principal facilities are for converting the basic hydrocarbons into suitable unsaturates for polymerization and their later polymerization and vulcanization to form finished products, was not announced but it becomes obvious that the job must be undertaken on a very large scale from the standpoint of money and material and can best be undertaken where existing large supplies of natural and refinery gases are already available.

The general public does not realize that literally hundreds of different elastomers, or rubber-like materials have been studied in the laboratory for years and that at least 10 different kinds of synthetic rubber will become increasingly important during the next 5 years. The production of a number of synthetic rubbers will be necessary because no single synthetic rubber has as yet been developed which has exactly the properties of natural rubber. Most of the synthetic rubbers are superior to natural rubber in some respects but in other respects they may be inferior. The actual manufacture of synthetic rubber will to a large extent be undertaken in large central establishments which draw from a large surrounding territory because no single area will have enough gas to supply the entire requirements for butane, isobutane and other four-carbon atom hydrocarbons.

Types of Synthetic Rubber

At the present status of our knowledge the types of rubbers that may depend upon the petroleum industry for raw stocks are:

Butyl rubbers—from butene, butadiene and possibly isobutene, isoprene, dimethyl butene, etc.

Buna rubbers—from butadiene and styrene.

Methyl rubber—from dimethylbutadiene.

None of these bulk stocks is present in natural gas, natural gasoline, or natural crude-oil products in more than traces and hence oils and gas are only fundamental sources of the necessary hydrocarbons just as coal, vegetable fiber, etc., are sources of these hydrocarbons in foreign countries. In one respect, however, oil and gas are superior starting stocks because they contain four-carbon atom hydrocarbons such as butane and isobutane (and other useful hydrocarbons) from which the butadiene, butene, isobutene can be made by relatively simple chemical processes. These chemical processes are, however, so complex that they cannot be built at many points.

The real function of the petroleum industry thus becomes one of accumulating additional amounts of the butane fraction that is already being separated in most natural-gasoline plants or in refinery gas-recovery systems. This will involve the operation of gasoline plant absorber with more absorption oil so that substantially all of the butane and isobutane is removed from the gas. Heretofore, a half to a third of these gases have not been absorbed because an adequate demand did not exist. Secondly, the fractionators or stabilizers must be operated for the production of a mixed butane cut which will be accumulated and shipped in high-pressure (60 lb. per sq. in.) containers or even tank cars to the central chemical conversion plants. A discussion of the recovery of butanes in gasoline plants was published in The Oil and Gas Journal of January 8, 1942, Page 38, entitled, "Isolation of Hydrocarbon Stocks for 100-Octane Aviation Fuels." These changes in natural-gasoline-plant operations are not complicated or expensive, nor are extensive equipment or utilities, such as water, needed in large amounts.

The amount of naturally occurring butane-like hydrocarbons that are available cannot be accurately estimated but it would seem that 50,000-70,000 bbl. per day of these hydrocarbons are being passed through existing natural-gasoline plants. The demand for these hydrocarbons for the war effort alone is somewhat as follows:

	Bbl. per day
For 100-octane gasoline	40,000-50,000
For synthetic rubber	3,000-30,000
Total	43,000-80,000

The great variation in the estimate for rubber production arose because no one knows exactly how much of the production will be made from butane-like hydrocarbons, whether the entire rubber output will finally be produced by synthetic methods, or whether the longer wearing quality of the synthetic rubber will decrease the total requirements by large amounts. In general it would seem that existing natural-gasoline plants (with small additions of equipment) could care for the situation for several years. Should the larger figure of 80,000 bbl. per day be required, or should we fail to curtail the use of butane in natural gasoline, additional butanes could be produced by the decomposition (cracking) of oils such as gas oil or perhaps light gasoline fractions.

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Tire Restrictions Not Severe In Oil-Field Operations

By PAUL REED

THE first effect of tire restrictions on the policies of oil companies engaged in field operations has been the immediate withdrawal of cars and trucks which can be spared without interfering with strict requirements. As one major-company executive expressed it, every car and truck which can be eliminated is held in a garage.

Because of the short time the restrictions have been in effect there is considerable uncertainty regarding the status of a large number of cars owned by employes which are essential for the efficient conduct of field operations as they are carried on under prevailing conditions. In certain areas it has become a common practice for employes to live in towns and drive considerable distances to the producing and drilling operations where they work. Since many employes prefer this arrangement, operating companies have accepted this as a substitute for having as large a proportion of the personnel living in company camps as formerly. It is now customary with a number of companies to have gagers paid mileage for the use of cars in which they make their rounds. It is expected that a ruling will be issued by Washington regarding the use of cars owned by employes which have a useful function in productive operations of various kinds.

Although the regulations appear to be stringent, some who have been closely concerned with the problem are of the opinion that means will be found for continuing in operation vehicles which are vitally needed in order that essential operations will not suffer. Oil companies can utilize certain provisions of the eligibility classification in its present form and there is reason to believe that certain liberal interpretations may be expected, particularly in the use of trucks. A vehicle with a capacity of 10 or more passengers operated exclusively for transporting employes to oil-industry operations is eligible for new tires if requirements of the rules are met. It has been stated that trucks transporting material and equipment for refinery, pipe-line, production and drilling operations are entitled to new tires since they are engaged in "construction and mainte-

(Continued on Page 31)

STATE CAPITALS...

TEXAS

THE STATE-WIDE proration hearing at which testimony will be taken for the February allowable will be held in Austin January 26. Crude purchasers have been instructed to submit nominations for their requirements from February through July.

A state wide gas hearing will be held January 19.

KANSAS

HEARING TO DETERMINE Kansas' crude-oil production in February will be held in Wichita January 23. The January allowable is 259,900 bbl. daily, the figure certified by the OPC.

The basic proration order for the Cunningham gas field of Pratt and Kingman counties will be reviewed by the Corporation Commission the same day to determine if existing rules should be modified or amended.

LOUISIANA

THE DEPARTMENT of Conservation, Minerals Division, will not be inclined to grant well allowables in the future except where evidence shows that operators have complied with rules of the OPM as to Conservation Order M-68. This announcement was made last week from Baton Rouge, La., as the state department pledged its support of the federal well-spacing and conservation program. Operators were advised to discontinue filing drilling-permit applications unless the location complies with M-68, or has been granted an exception.

ILLINOIS

THE STATE DIVISION of Oil and Gas Conservation on January 8 resumed issuance of drilling permits after a temporary suspension in order to check location of active operations. The action was taken to comply with an order from Wirt Franklin of Chicago, OPC regional director for District 2, banning more than one well in any 40-acre tract.

Division officials ruled that future tests may be drilled on any location within such tracts rather than in the exact center of the area after numerous inquiries had been received from operators.

A majority of leaders of both political parties in the general assembly believe a tardy attempt at this time to enact regulatory legislation in the face of actual OPC control would not strengthen existing state-governmental agencies. They assume that for the duration of the war the state division will serve only as a subservient agency to enforce current OPC rulings.

Clarence T. Smith, Illinois representative on the Interstate Compact Commission and an advisor of the governor, has urged the designation of a prominent representative of the industry to serve as a liaison officer to work with OPC officials in enforcement of the "one well to 40 acres" ruling.

MISSISSIPPI

THE STATE Oil and Gas Board has announced that it will follow its own regulatory measures in governing the state's oil-producing allowable and will ignore the recommendations from the Office of Petroleum Coordinator in Washington. The OPC recommended a daily allowable of 60,000 bbl. for the State of Mississippi, however, the Oil and Gas Board set the January allowable at approximately 75,000 bbl. daily.

Taxes on petroleum in Mississippi are expected to be raised considerably in the near future. Gov. Paul B. Johnson recommended that the legislature pass a crude-oil tax of not less than 5 per cent and up to 10 per cent on the varying grades of petroleum produced in the state. He further stated that he favored the motion to have all oil produced in Mississippi actually refined within the state.

MICHIGAN

ALLOWABLES OF WELLS in several Michigan fields were raised last week to relieve a shortage which, state officials said, threatened to force a shutdown of several refining operations.

Allowables of Reed City field wells were advanced from 125 to 175 bbl. daily and those in the Headquarters-Roscommon field were upped from 200 to a maximum of 250 bbl. daily.

Previously, P. J. Hoffmaster, state supervisor, had raised allowables of wells in the Roscommon and Winterfield areas from 125 to 200 bbl. daily. Increases authorized last week are expected to raise the state's allowable by 6,000 to 6,500 bbl. daily.

The January allowable was set at 47,400 bbl. daily to conform with the certification issued late in December by the OPC.

California Civilian Driving Reduced

LOS ANGELES, Calif., Jan. 13.—The tire shortage may not be reflected in reduced gasoline sales for several months, but there can be no doubt that civilians on the West Coast are doing less driving. This reflects a desire to prolong the life of tires and inconveniences of blackout regulations. The blackout orders are to abandon all automobiles when the warnings are heard.

A recent check of service stations shows a very decided drop in gasoline sales but it may be another several months before the maximum decline becomes evident. Sales for December will probably not show much change as many service stations took additional deliveries of gasoline to protect themselves and to aid marketers in spreading gasoline stocks over as much territory as possible. January sales, however, should reflect a more accurate picture. It is believed that long trips will be curtailed. A marked drop has already been noted on state highways and in some districts service stations remain open only from 7 to 7. The rubber situation will probably eliminate any necessity of rationing. gasoline in Pacific Coast territory during 1942 but the reduction in sales of gasoline will be reflected in a lower demand for crude oil. Requests have been made to increase production of heavy crude oil and retard yield of the lighter grades. Recognition of the demand for various grades of crude oil will be taken before setting the February allowables according to E. E. Pyles, chairman of District 5 production committee.

Considerable time will be required to complete studies of the plan and determine its affect on the various fields throughout the state. The problem is complicated by disruption of marine transportation. The plan itself establishes principles of production practice in California by which the industry is expected to govern its activities during the emergency. The plan prohibits the transfer of allowables from one field to another. This has been a troublesome and controversial factor for several years. One of the most important things in connection with the production plan for California, in the opinion of many, is that provision which makes it obligatory for the production committee to consider the kind and quality of petroleum produced in the various fields, pools, or wells, in relation to current requirements, the availability of transportation, the effect of reducing rates of production on the continuity of production, and the maximum production for large wells and minimum production for small wells.

W.P.R.A. Holds Questions-Answers Type Meeting in Shreveport

SHREVEPORT, La., Jan. 9.—The Arkansas and Louisiana branch of the Western Petroleum Refiners Association held its first meeting of the new year here today. Arranged under the supervision of Leon C. Grosjean, formerly director of the Louisiana and Arkansas branch of the association and now located in the central office at Tulsa, it was a questions-and-answer type of forum.

The technical meeting was, more or less, a continuation of a meeting held here the middle of November of 1941. There were at that time 62 technical questions before the group for open-forum discussion. Only some 18 to 20 of these were given consideration at that time and the remainder, with some additions, were carried over to this second meeting.

Centering the discussion of the new meeting was a question vital to all refiners and one which was, by special request, carried over from the previous meeting. It was concerning the erosion and corrosion of refinery-still tubes which have been welded together or have had new tips welded to them. This subject, together with opinions concerning the trend toward steel container substitutes for refinery products, highlighted the forum.

The meeting was held in the Washington-Youree Hotel and a dinner followed the afternoon session of the meeting.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Premium on Flexibility

The petroleum industry in 1942 will have need to make full use of its flexibility. Now as never before it must be in a position quickly to adjust its operations to new developments, some of which will continue to come overnight.

The January gasoline situation is a case in point. The Bureau of Mines placed this month's motor-fuel demand at 52,900,000 bbl., a gain of 11.6 per cent over January last year. This estimate was made before rubber rationing was announced.

While there is some disagreement among those who have attempted to analyze the full significance of the tire restrictions, it is agreed that this development is already reflected in gasoline consumption. Its importance will increase throughout the year should the present rubber retrenchment continue in effect. Every division of the petroleum industry has a major interest in seeing that the "ifs" in this program, so far as they affect petroleum operations, are removed immediately.

Should domestic gasoline consumption be reduced 5 per cent under expectation and refiners make no provision for this market loss at their plants, 2,500,000 bbl. more motor fuel will be in storage at the end of the month than was planned. With present gasoline inventories substantially ahead of last year, this additional increase might have market significance in February and later months.

The industry can't afford to wait until the contraction in retail markets is reflected in weekly and monthly reports covering its operations. In those reports, gasoline demand is based on refinery shipments and there is a lag of 2 to 4 weeks between this movement and sales at the filling stations. The past offers many examples of what happens when the industry is slow in adjusting its operating levels to shifts in the demands for products with an unprofitable market always the final result.

It will be well to keep in mind in this connection, that while ceilings are being placed on prices during this emergency, the price-fixing agencies are not concerned with how low they go. That responsibility rests entirely with the seller.

If restrictions on the use of rubber by many millions of car owners are to continue for a prolonged period then refiners should start preparing now for the adjustments that are ahead. Should OPC predictions of a reduction of 35 per cent in civilian gasoline demands materialize, refiners for the first time in this century will have the task of reducing gasoline yields. Only operators of refineries and natural-gasoline plants can appreciate what such a program would mean. Disastrous results to operators and their customers can only be avoided through planning which will anticipate needs.

No one who has studied the war program as it has been outlined over the past few days will question the statement that it will have a direct bearing on all phases of the oil industry's operations. Today it is gasoline and materials for producing operations. Tomorrow it may be furnace oils and heavy fuel oils.

Increases in exports may offset any domestic decreases. The possible loss of East Indian oil to Japan in the battle now under way bears on this situation.

The Government has announced a huge program which staggers the imagination, covering the construction of synthetic rubber plants, with the principal base materials to be made available by the oil industry. This comes at a time when refiners are confronted with operating changes of many ramifications in the plans to more than treble 100-octane gasoline production.

All this places a premium on flexibility, which fortunately the petroleum industry has. Its proper utilization at this time will greatly simplify the solution of the many problems ahead.

Liquefied Petroleum Gas Use Sets Record During 1941

By G. G. OBERFELL
Vice President, Phillips Petroleum Co.

No one is better suited to evaluate the position of the liquefied petroleum gas industry than the author. He has combined nearly 30 years of technical experience and executive work in the natural gasoline and refining industries. He was a captain in the Chemical Warfare Service during World War No. 1. He is well qualified to predict requirements.

THE year 1941 was a most unusual one for the liquefied petroleum gas industry—a year which made new highs in marketed production for all types of uses in spite of (*a*) the difficulty in obtaining materials for new installations, (*b*) curtailment of sales activities in many quarters because of inability to secure customer equipment and appliances and (*c*) restrictions on appliance financing. It was a year which saw a great increase in the industrial uses of liquefied gases in defense work and an increase in the amounts of certain associated hydrocarbons used in the manufacture of synthetic rubber and plastics.

Table 1 shows the estimated marketed production of liquefied petroleum gas during 1941 as 445,000,000 gal., compared with 313,456,000 gal. for 1940, or an increase of 42 per cent.

Table 1 "Total Sales" for all years except 1941 were obtained from U. S. Bureau of Mines report. "Distribution" for the years 1931 to 1940 inclusive was obtained from the same source. All other volumes are estimated by the writer. Total sales volumes include all liquefied petroleum gas (propane, butane, butane-pentane mixtures, and pentane) when sold as such. It includes sale of pentane when sold for any purpose other than motor-fuel blending. It does not include butane when blended with heavier petroleum fractions for motor-fuel purposes nor does it include sales of hydrocarbon gases delivered by pipe line in the gaseous state to certain large chemical concerns located adjacent to the points of production of the hydrocarbon gases. However, such sales for chemical-manufacturing purposes are included if the liquefied petroleum gases are transported by tank car or tank truck in liquid form. Purchases of liquefied petroleum gases by one company from another and then sold as liquefied petroleum gas have been eliminated in order to avoid duplication of sales figures. Table 1 does not reflect those quantities of liquefied petroleum gas used by producers for such purposes as fuel, solvents, dewaxing, and for gasoline-manufacturing purposes.

Many dredges used in improving navigability of rivers, harbors and canals typified by this unit are powered with liquefied-gas-fueled engines

TABLE 1—MARKETED PRODUCTION OF LIQUEFIED PETROLEUM GAS

Year—	Total sales: Gallons per year	Total sales: Per cent increase over previous year	Distribution—Gallons per year: Domestic	Per cent increase over previous year	Industrial and miscellaneous	Per cent increase over previous year	Gas manufacturing	Per cent increase over previous year
1922	222,641							
1923	276,863	24.4						
1924	376,488	36.0	Sale of liquefied petroleum gas confined primarily to bottled-gas business prior to 1928					
1925	403,674	7.2						
1926	465,085	15.2						
1927	1,091,005	134.6						
1928	4,522,899	314.6	2,600,000		400,000		1,500,000	
1929	9,930,964	119.6	5,900,000	126.9	1,500,000	275.0	2,500,000	66.7
1930	18,017,347	81.4	11,800,000	100.0	2,200,000	46.7	4,000,000	60.0
1931	28,769,576	59.7	15,294,648	29.6	7,171,686	226.0	6,303,242	57.6
1932	34,114,767	18.6	16,244,103	6.2	8,167,194	13.9	9,703,470	53.9
1933	39,931,008	14.1	16,625,588	2.3	13,987,095	71.3	8,318,325	14.3
1934	56,427,000	44.9	17,681,000	6.3	32,448,000	132.0	6,298,000	24.3
1935	76,855,000	36.2	21,380,000	20.9	47,894,000	47.6	7,581,000	20.4
1936	106,652,000	38.8	30,014,000	40.4	67,267,000	40.5	9,371,000	23.6
1937	141,400,000	32.7	40,823,000	36.0	89,402,000	32.9	11,175,000	19.3
1938	165,201,000	16.7	57,832,000	41.7	94,983,000	6.2	12,386,000	9.8
1939	223,580,000	35.3	87,530,000	51.3	120,615,000	27.0	15,435,000	24.6
1940	313,456,000	40.2	134,018,000	53.1	159,153,000	32.0	20,285,000	31.4
1941	445,000,000	42.0	221,880,000	65.5	193,456,000	21.4	29,644,000	46.1

Demand Up 65.5 Per Cent

The estimated domestic use of liquefied petroleum gas in 1941 amounts to 221,880,000 gal., an increase of 65.5 per cent over 1940 when 134,018,000 gal. (42.7 per cent) were so consumed. On the basis of the most reliable information available to the writer, the number of new domestic users of liquefied petroleum gas increased approximately 520,000 during the year. It is now estimated that there are a total of 1,645,000 users in the domestic and small commercial classification—a growth due largely to increasing public acceptance of liquefied petroleum gas as an ideal domestic and commercial fuel. It appears that the largest increase in new domestic customers was secured by marketers employing aboveground equipment (propane in stationary or replaceable cylinders), with the underground-equipment marketers (butane or butane-propane mixtures in buried containers) also scoring a substantial increase. There was some increased use of "liquid feed" systems (butane-propane mixtures which are fed to a special vaporizer near the point of consumption). Doubtless many additional thousands of domestic and commercial consumers could have been secured in 1941, had it been possible for the marketers, their distributors and dealers to secure the necessary appliances and equipment with which to make additional installations.

Many new industrial installations were made, principally in the heavy manufacturing areas in the North and East, and a majority use propane, delivered in tank-car quantities. There was little difficulty in installing these systems since nearly all of the plants were in defense work, and carried high priorities for equipment. From these installations, liquefied-petroleum gas is used in the manufacture of battleships, machine guns, tanks, hydraulic pumps, aluminum shapes, shells, airplane parts, cruisers, destroyers, tankers, and ordnance of all types. Due to heavy demands being placed on regular utilities, many large indus-

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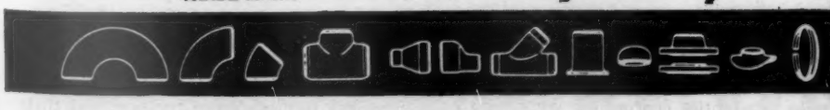

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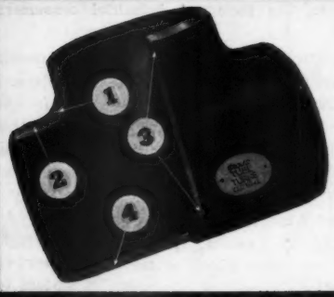

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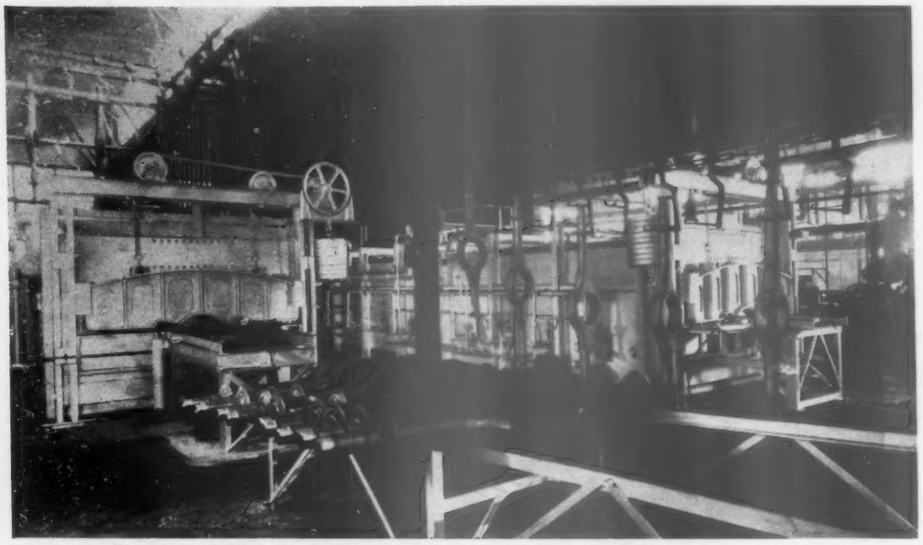
trial concerns have installed liquefied petroleum gas systems as standby to insure fuel service for vital manufacturing operations during periods when the utility system has high-peak loads. As existing industrial plants throughout the country became more heavily engaged in defense work, an increasing percentage of liquefied gas sold to industrial and utility plants is going into the making of defense articles.

Liquefied petroleum gas systems have been installed to furnish piped-gas service for several large housing projects in defense areas. The gas is delivered to some of the plants via tank car and to others via tank truck. One very large utility installation is being completed in an Ontario, Canada, city, where normal requirements are met



Heat-treating furnaces fired with liquefied gas, such as shown here, are important industrial consumers of these products

with natural gas. The liquefied-petroleum gas is to be used to supplement oil-gas for standby and peak-load control. Over 200 cities are now employing or arranging to use undiluted butane or propane, propane-air, butane-air, propane, butane, or mixtures for the sole source of gas or for standby, peak-load control, or enrichment.

Increasing quantities of liquefied petroleum gas were transported direct from gasoline plants or refineries to consumers, or from pipe-line terminals to consumers in 1941.

Chemical Importance Increasing

In the chemical field, liquefied petroleum gases became an increasingly important source of raw material. Volume shipments of special grades of propane, normal butane, isobutane, and butadiene were made for use in the manufacture of nitroparaffins, plastics, and synthetic rubber. For experimental and pilot-plant operations such special hydrocarbons as propylene, butylene, isobutylene, and others are now available in pure and technical grades.

Competition for the domestic markets continues keen from both within and without the industry, electricity being the principal competitor from without the industry for this large potential domestic consumer market. Prices within the industry have, in general, strengthened, particularly in the Southwest.

In addition to increasing volumes absorbed in present markets during 1941, new uses began to require appreciable volumes of hydrocarbons in the liquefied-gas range. Among these were butadiene and isoheptene for manufacturing synthetic rubber, diolefins for plastics, propane for nitroparaffins, and normal butane for conversion into isobutane in the manufacture of aviation gasoline by the isomerization and alkylation processes.

Last year saw the first large-scale installation of propane-fired heaters for removing accumulations of ice and snow on switches in railroad yards. The installation was made after limited trial operations during the winters of 1939-40 and 1940-41.

Certain marketers, realizing the importance of safety in the design, installation, and operation of liquefied petroleum gas equipment, have placed increased emphasis on this phase of the business. Safety meetings for operating personnel were made a regular procedure in some instances. Safety meetings also were held by marketers for their dealers. Many companies secured new listings of their systems with Underwriters' Laboratories, and other regulatory authorities. The industry is to be complimented on its increased emphasis on safety, although further work is required.

Many states have enacted laws requiring payment of motor-fuel taxes on only those quantities of liquefied petroleum gas sold or used to propel motor vehicles upon the public highway. These states, together with the effective date of such legislation, are as follows:

Washington, July 1, 1941; California, July 1, 1937; Nevada, July 1, 1939; Utah, May 13, 1941; Arizona, July 1, 1941; New Mexico, July 1, 1939; North Dakota, July 1, 1941; South Dakota, July 1, 1941; Nebraska, September 8, 1939; Kansas, July 1, 1941; Oklahoma, April 12, 1939; New Jersey, July 12, 1939; Texas, May 1, 1941; Missouri, October 10, 1941; Maine, July 26, 1941; Arkansas, July 1, 1941; Louisiana, July 31, 1940; Wisconsin, October 6, 1939; Illinois, July 19, 1939; Kentucky, May 13, 1936; Tennessee, February 15, 1941; Mississippi, May 1, 1938; Alabama, August 1, 1940; Florida, July 1, 1939; North Carolina, July 1, 1941; Iowa, July 4, 1941; Minnesota, April 28, 1941.

In 1941, additional states have adopted rules and regulations governing the safe storage, handling, transportation, and utilization of liquefied petroleum gas. A large percentage of these regulations were in substantial conformity with the National Board of Fire Underwriters' standards. These states now have liquefied petroleum gas rules and regulations:

New Mexico, Louisiana, Oklahoma, Texas, California, Alabama, Kansas, Kentucky, Arkansas, Tennessee, Indiana, Iowa, Michigan, Mississippi, South Dakota, Wisconsin, and Minnesota.

As 1941 ended, the liquefied petroleum gas industry found itself in a most difficult position from the standpoint of obtaining equipment with which to make new customer installations in 1942. During the latter part of 1941, several marketers of domestic systems had placed their dealers on an allocation basis, allowing them only a certain percentage of 1940 system and appliance sales. Copper, aluminum, zinc, synthetic rubber, steel, and other metals have been widely used in liquefied petroleum gas systems and appliances, and, of course, all are critical materials. With war under way, the industry's new sales probably will come close to a halt as soon as the available warehouse stocks are used up. Equipment companies catering largely to the liquefied petroleum-gas industry already have or are rapidly switching over a portion of plant facilities from the manufacture of liquefied petroleum-gas industry articles to war items.

However, certain leading marketers and equipment manufacturers have spent considerable time on research work connected with development and use of substitute or alternate materials and equipment wtih noteworthy success. These efforts are being continued.

In view of restricted output and difficulty in obtaining necessary materials under war conditions, appliance manufacturers are working to eliminate or reduce the use of aluminum, chromium, and other critical materials and will undoubtedly reduce the number of models manufactured in 1942.

It appears that approximately as many new appliances will be obtainable as the number of new systems, including cylinders, which can be spared from war needs.

Production facilities continue to expand at both refineries and natural-gasoline plants, with the major output of the latter flowing into motor or aviation-fuel channels as raw material for blending, polymerization, alkylation, and isomerization.

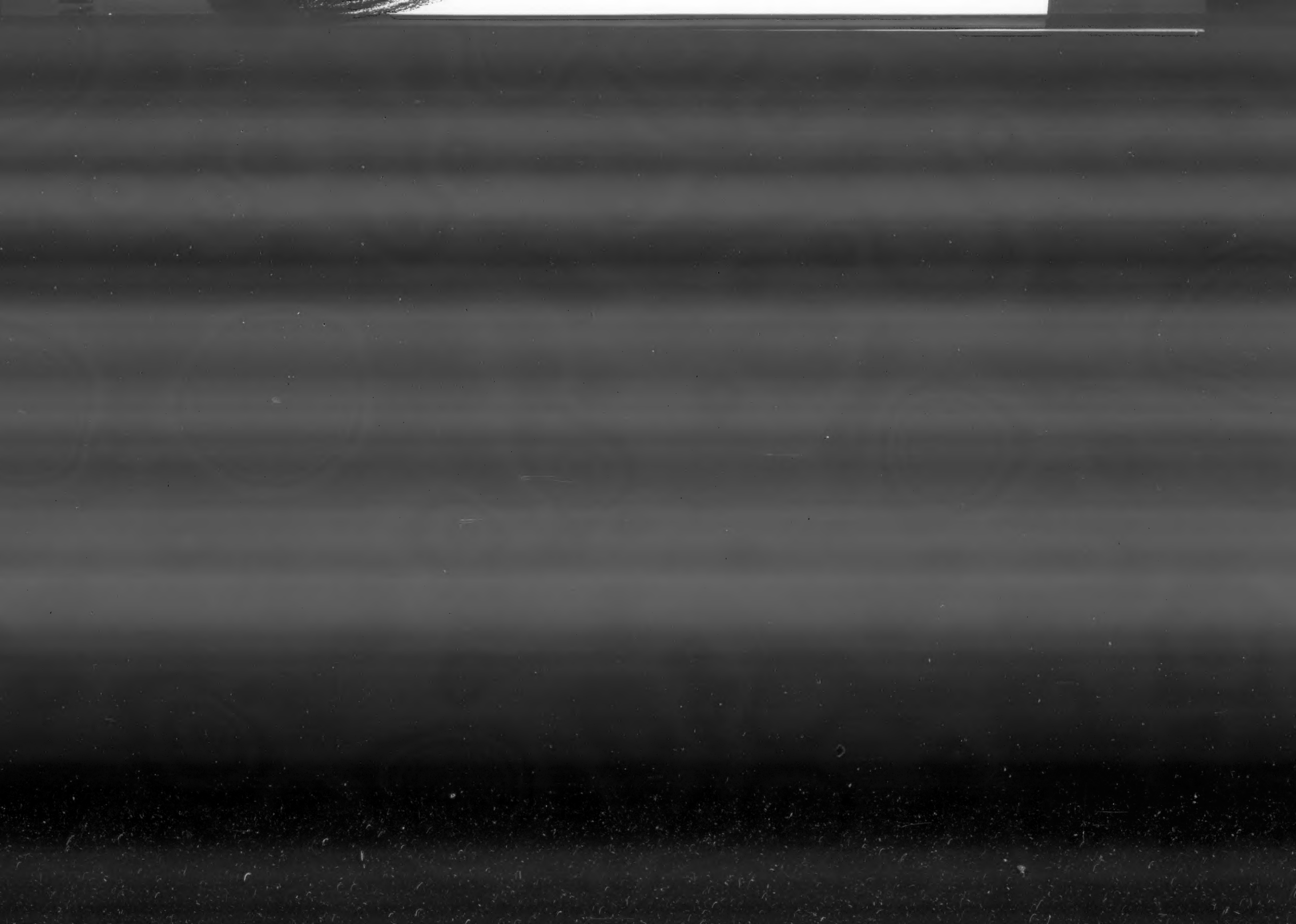
The following states now have liquefied petroleum gas production:

Massachusetts, Texas*, New Jersey*, New Mexico*, Pennsylvania*, California*, West Virginia, Ohio, Colorado, Wyoming, Kentucky, Montana, Indiana, Kansas, Illinois, Oklahoma*, Arkansas*, Louisiana, and Quebec.

One trend in refining technology relating to the manufacture of aviation gasoline which will have a pronounced effect on the available supply of butanes to the liquefied petroleum-gas industry is the process of isomerization of normal butane into isobutane, with the isobutane then being converted into aviation gasoline by either the thermal or catalytic alkylation process. The demands for tremendous quantities of aviation gasoline under the war program has greatly stimulated the installation of new large-capacity isomerization and alkylation plants, and plans for further expansion along these lines throughout the petroleum industry are well under way.

It is still to early to estimate the volume of normal and isobutane to be required for the manufacture of aviation gasoline, however, it is reasonable to assume that large quantities heretofore available to the liquefied petroleum-gas industry will soon go into aviation-gasoline channels. Consequently, those marketers who have had a policy of marketing propane or furnishing storage and utilization equipment suitable for the use of propane are in a preferred position, and their customers will be better able to obtain liquefied petroleum gas in years to come.

*Additional liquefied petroleum gas production plants added in 1941.



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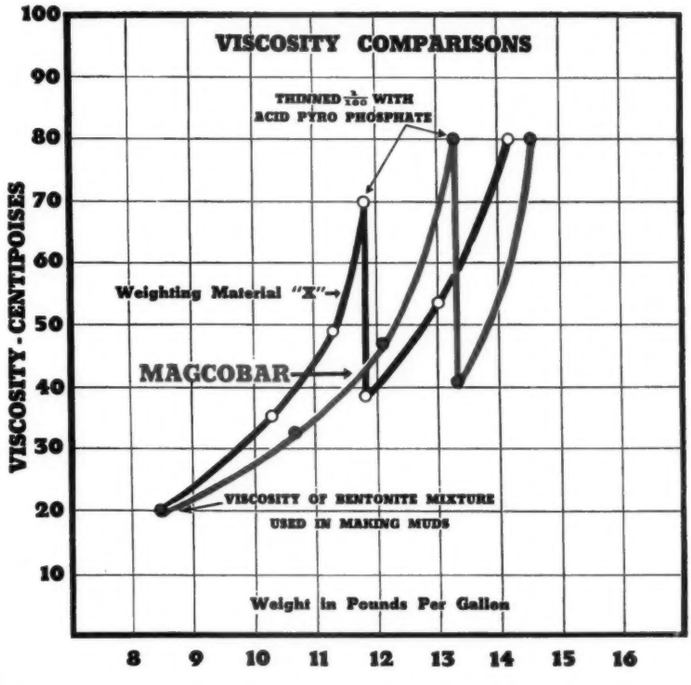

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Twenty Per Cent of Texas Oil Labeled Aviation Base

AUSTIN, Tex., Jan. 13.—Twenty per cent of Texas' crude-oil production has been earmarked for the exclusive production of aviation-gasoline base stock by order of the Railroad Commission implementing Recommendation 28 issued by the OPC January 1.

Production from 62 Texas fields, chiefly in the Gulf Coast district, was segregated by the commission for processing to refineries equipped with facilities for recovering the maximum volume of naphtha qualifying for aviation-fuel base stock. All refineries processing crude from any of the earmarked fields were ordered to keep records and be prepared to report the quantity of oil processed, the quantity of aviation-grade naphtha produced and the quantities of 91 or 100-octane gasoline.

Meanwhile, several operators in the fields producing aviation-base crude filed applications with the commission for institution of 40-acre units. Creation of larger units is based on the importance of acreage in the Texas proration formula. By increasing the acreage allocated to high octane crude-producing fields, the commission could meet the request for higher production from those areas and still stay within confines of the proration formula.

Unanswered at week's opening was the problem of satisfying refiners lacking facilities to recover the maximum volume of aviation naphtha who will be forced to operate on inferior crudes when supplies of high octane stocks are diverted to the more efficient plants. This problem appeared of comparatively minor importance in an analysis of the purchasing and pipe-line companies operating in the 62 designated fields.

Still, there are a few refineries in the Corpus Christi and Houston areas drawing all or a part of their supplies from the high octane fields that will have to either accept a less desirable oil in an exchange arrangement, install facilities for maximum recovery of the aviation naphtha, or dispose of naphtha recovered from earmarked crude to plants that are in position to make 91 or 100-octane gasoline.

Representatives of Texas refiners held numerous closed sessions last week and this with members of the Railroad Commission staff working on problems of implementing the Texas orders and the OPC recommendation.

Although production from the 62 fields is segregated in effect, the commission order does not prevent comingling with other crudes used in the production of aviation-base naphtha.

Some of the refiners now receiving crude from the earmarked fields who lack equipment for production of aviation gasoline are already disposing of their quality naphtha to more elaborately equipped plants in the Gulf Coast area. In such cases, the earmarking order will cause but slight variation in their normal operations.

In other cases, refiners who have been using aviation-base naphtha recovered from crude produced in the earmarked fields as the main component of motor fuel will be compelled to revise their operations, possibly to the extent of exchanging crude-charging stock or naphtha. The exchange of higher quality naphtha for larger quantities of regular motor-fuel base stocks may be a solution to capacity problems of the smaller plants which have been struggling against a tight crude-supply situation.

The 62 fields listed by the commission have a daily allowable of 448,317 bbl., which is approximately 26 per cent of the Texas total. Production from the fields in October was 24 per cent of the aggregate.

DATA ON 62 TEXAS FIELDS EARMARKED FOR AVIATION-NAPHTHA PRODUCTION

Field—	Number of wells—Flowing	Number of wells—Lift	Daily allowable*	Daily production†	Purchaser—pipe lines—	Per cent naphtha (about 400 e.p.)	Octane number‡
Amelia	111	....	5,077	3,556	Humble	6.6-16.5	64
Anahuac	359	7	20,113	14,235	Gulf, Humble, Sun	.....	....
Hitchcock	10	4	560	377	Stewarts	7.5	....
Batson	3	188	1,098	821	Sun	8.2	....
Cedar Point	16	....	1,043	741	Humble	7.3	66
Clear Lake	44	....	2,419	1,703	Humble	10-14.2	63-65
Conroe	907	36	45,468	32,068	Frankel, American Liberty, Texas, Tide Water, Humble, Sun, Houston	.....	....
Cotton Lake	6	3	360	256	Sun	11.1-21.7	63
Fairbanks	292	1	11,753	8,327	Stanolind	.....	....
Webster	209	2	12,661	8,984	Humble	.....	....
Hardin	131	21	6,727	4,665	Sun, Humble	.....	....
Hastings	674	15	30,935	21,964	Pan American, Humble	18.2-20.9	64
Hillje	12	3	980	717	Texas	10.2	65
Hull	16	195	9,333	6,874	Sun, Humble, Gulf, Amerada	Max. 18.0	63-67
Lolita	166	....	8,132	5,212	Magnolia	.....	....
Lovell's Lake	78	....	5,711	3,915	Humble, Gulf	.....	....
Magnet	74	....	3,232	2,260	Texas, Humble	6.4	65
Old Ocean	103	3	21,115	14,913	Stanolind, Sun, Old Ocean, Amerada, Fidelity, Harrison-Abercrombie	Max. 29.4	66-69
Raccoon Bend	1	76	1,358	1,122	Humble	.....	....
Raccoon (Cockfield)	66	18	3,780	2,694	Humble	.....	....
Rowan	7	....	574	408	Humble	.....	....
Segno	31	6	1,293	914	Gulf	.....	....
Sheridan	3	....	186	132	Shell	.....	....
South Cotton Lake	34	15	2,606	1,731	Sun	.....	....
South Houston	68	24	3,073	2,179	Pan American	9.9-16.3	63
Withers	241	7	12,853	8,888	Texas	6.0	....
Tomball	355	114	13,641	9,784	Humble, Houston, Magnolia	.....	....
Turtle Bay	34	....	1,930	1,399	Sun, Humble	16.7	62
West Beaumont	50	9	2,021	1,973	Stanolind, Gulf	6.5-8.3	64-67
West Ranch	358	3	17,953	12,125	Magnolia	16.6-17.9	65
Alfred	20	2	710	499	Continental	.....	....
Clara Driscoll	10	12	544	451	Continental, Houston, Mar.	Max. 41.0	58-77
East White Point	236	3	11,389	8,050	Amsco, Republic, Humble, Houston	38.0	60-65
Heyser	232	20	11,454	7,479	Barnsdall, Humble, Republic	28-55.0	61
La Rosa	83	1	5,706	2,852	Corpus Rosa, Houston, Humble, Mar, Stanolind	.....	....
Plymouth	177	7	9,418	6,648	Humble, Republic, Amsco	29.5-47.1	58-63
New Refugio	92	10	4,481	3,254	Atlantic, Corpus Rosa, Houston, Taylor	Max. 80.3	....
Reynolds	24	3	1,005	696	Southern Minerals	24.7-35.6	60-68
Taft	47	22	2,382	1,689	Texas, Humble, Amsco	Max. 8.3	67-70
Tom O'Connor	448	1	22,829	16,102	Humble	30.0	66
Wade City	93	4	4,385	3,050	Continental, Southern Minerals	27.2	66
Turkey Creek	39	18	2,257	1,594	Phillips, Mar, Taylor, Southern Minerals	Max. 39.0	64-71
Orange Grove	30	....	1,761	1,132	Continental Southern Minerals	.....	....
Bridwell	10	....	292	179	Humble	.....	....
O'Hern	....	201	2,886	2,379	Magnolia, Hamill & Smith, Continental	21.8	66
Conoco Driscoll	57	10	3,741	2,678	Continental	.....	....
Fitzsimmons	69	9	2,035	1,601	Houston, Humble	.....	....
Hoffman	7	327	8,137	5,707	Continental, Sun, Humble	Max. 20.9	64-68
Loma Novia	....	595	7,696	5,896	Magnolia, Continental, Texas, Humble	6-9.5	68
Benavides	219	104	5,835	4,178	Humble, Republic	.....	....
Rincon	118	....	5,392	3,355	W. R. Davis Co., Coastal Refining	35.7-49.0	62-71
Sun	66	3	2,043	1,392	Sun, Humble	.....	....
Yates	513	57	22,014	15,579	Gulf, Humble, Ohio, Shell	.....	....
Luling	1	737	6,382	6,026	Magnolia, Grayburg	.....	....
Cayuga	203	80	12,219	11,498	Pan American	.....	....
Long Lake	139	....	5,856	3,980	Sinclair	.....	....
Government Wells	4	646	11,136	8,256	Continental, Humble, Magnolia, Sun, Texas	4.0-50.0	66
Colorado	162	24	4,636	3,038	Humble	.....	....
Kelsey	110	....	3,335	2,340	Humble	.....	....
South Alice	62	2	3,252	1,406	Mar, Humble	.....	....
Saxet	108	200	9,400	6,173	Amsco, Taylor, Southern Minerals, Republic, Crown Central, Texas	2.8-14.5	62-72
Luby	143	5	5,724	4,040	Stanolind, Amsco	.....	....
Total	7,981	3,853	448,317	318,134			

*Railroad Commission figures for January. †Railroad Commission detailed data for October. ‡From W. L. Nelson, The Oil and Gas Journal, January 1, 1942.

Two Directors Appointed for Gas and Natural Gasoline

WASHINGTON, D. C., Jan. 12.—Appointment of directors for the natural-gas and natural-gasoline branches of the oil industry in two districts last week advanced the OPC program for full utilization of hydrocarbons in prosecuting the war economy.

D. E. Buchanan, Tulsa, president of Hanlon-Buchanan, Inc., was made director of the division for District 3 and he has already established offices at Houston, Tex., headquarters for the region.

D. E. BUCHANAN

FRANK M. BREWSTER

Frank M. Brewster, Bradford, Pa., now on leave as president and general manager of the Belmont Quadrangle Drilling Corp., was appointed head of the natural-gas and natural-gasoline division in District 1.

The states in District 3—Alabama, Mississippi, Louisiana, Texas, and New Mexico—contain almost 90 per cent of the nation's cycling plants. One of Mr. Buchanan's first duties will be to mobilize the potential production of butane, isobutane, and isopentane, the basic ingredients of 100-octane gasoline, so that the aviation-fuel program will be pushed to the maximum.

Mr. Buchanan is one of the pinoeers in the manufacture, sale, and transportation of natural gas and natural gasoline. In 1937, he was chairman of the official United States delegation to the second World Petroleum Congress in Paris. For the last 15 years he has been a director of the American Petroleum Institute and active in industry-association work.

The new natural-gas and natural-gasoline division for District 1 will coordinate activities of the industry throughout the area, but particularly in the Pittsburgh-Cleveland-Youngstown industrial region which annually consumes about 40 per cent of the nation's natural-gas output. Within the district are 19 states and the District of Columbia. Ohio and Kentucky, normally considered in District 2, have been included in District 1 under the new setup for administrative reasons. Chief function of the District 1 organization will be to maintain and augment supplies of essential fuel necessary to keep defense industries of the Appalachian area running at full capacity.

Assisting Mr. Brewster will be Virgil F. Bowyer, Pittsburgh, Pa., who has been head of the land department and special executive representative for the Peoples Natural Gas Co.

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Higher Butane Recovery Urged

WASHINGTON, D. C., Jan. 12.—Increased production of butane, isobutane and isopentane in the oil fields, in order that alkylate for aviation gasoline may be manufactured there, was recommended today by Petroleum Coordinator Ickes.

"In order to assure maximum production of all grades of aviation gasoline," Ralph K. Davis said, "it is essential that there be maximum production of those products which are vital to its manufacture; that is, butane, isobutane and isopentane.

"Existing and proposed natural-gasoline-extraction plants, cycling plants, pressure-maintenance plants and repressuring plants are prime sources of butane, isobutane and isopentane and should be so constructed and operated as to facilitate the maximum production of aviation gasoline.

"It is to expedite the achievement of this goal that this order has been issued, for we all recognize that successful prosecution of the nation's war effort requires that the production of all grades of aviation gasoline be increased to the maximum," he explained.

Following are the major provisions of the order:

"The natural gas and natural gasoline committees for the several districts shall obtain, compile and analyze all pertinent and available facts, figures and data with respect to the extraction, production, sale or disposition of butane, isobutane and isopentane by natural-gasoline-extraction plants, cycling plants, pressure-maintenance plants and repressuring plants. Such survey should include, without limitation, information concerning the number, type and location of such plants, the present daily capacities of such plants and the possibilities of expansion thereof, the percentage and amount of butane, isobutane and isopentane extracted from the gas processed at such plants, the percentage and amount of butane, isobutane and isopentane saved and sold during the calendar year 1941 at or by such plants.

"Within 30 days from the date hereof each owner or operator of a natural-gasoline-extraction plant shall file in the Office of Petroleum Coordinator for National Defense a statement of the terms of existing contracts and agreements relating to the sale or other disposition of butane, isobutane, or isopentane either as free products or as they may be included in any other product.

"All persons, natural or artificial, presently owning or operating any natural-gasoline-extraction plant, cycling plant, pressure-maintenance plant or repressuring plant shall increase the percentage of butane and isobutane extracted from the gas processed at such plant, or plants, to the maximum quantity economically possible and shall increase the production of butane and isobutane in liquid form at such plant, or plants, to the maximum quantity economically possible.

"All new natural-gasoline-extraction plants, cycling plants, pressure-maintenance plants or repressuring plants shall be designed and constructed so as to make the most efficient use of scarce materials, to provide for the extraction of the maximum amount of butane and isobutane contained in the gas to be processed at such plants, and to assure the maximum production of butane and isobutane in liquid form at such plants."

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PIC Studying Ways to Increase Reserves

WASHINGTON, D. C., Jan. 10.—A special subcommittee to make an immediate study of means of preventing the abandonment of small wells and of increasing crude reserves generally was appointed today by William R. Boyd, Jr., chairman of the Petroleum Industry Council for National Defense.

The committee has been asked to prepare recommendations to the petroleum coordinator as soon as possible and also to draft suggestions for a general program to increase the crude reserves of the nation. Mr. Boyd said that there is a definite fear that many small producing wells may be abandoned in the near future because of various factors and that the council believes that definite steps should be taken to keep them in operation. Although the announcement made no mention of the price situation, it is expected that the committee will undoubtedly give considerable attention to reports that the present price of crude oil as fixed by the OPA is forcing the closing of many small wells.

Refinery Expansion

Refinery Data Required By OPC Are Simplified

WASHINGTON, D. C., Jan. 10.—Considerable reporting work formerly required of refiners of aviation gasoline has been eliminated by a series of amendments to Recommendation 16 announced today by the Office of Petroleum Coordinator.

The amendments are designed to simplify and speed up the administration of the recommendation without sacrificing any of its important provisions.

Section 1504.15 now requires that a statement of the terms of all contracts and agreements for the production, storage, use, sale, or other disposition of aviation gasoline, base stocks, and blending agents be filed with the OPC. The amendment to this section would relieve from this requirement contracts and agreements with respect to production. The reason for this amendment is that the refining division of OPC already has information concerning the more important production contracts and does not wish to have to handle or to burden the industry with the preparation of statements concerning hundreds of small and relatively unimportant contracts.

Section 1504.16 now requires antecedent notice of all action hereafter taken with respect to aviation gasoline, base stocks, and blending agents. The amendment relieves from this requirement action taken with respect to the production or storage of aviation gasoline, base stocks, and blending agents, and provides instead for subsequent notice thereof. This amendment is considered necessary in order that there be no possibility of delay in increasing the production and storage of such materials. The amendment to this section also excepts from its provisions aviation gasoline which fulfills the requirements of Recommendation 8 Supplement, that is, aviation gasoline of 85-octane rating or less produced by the addition of tetraethyl lead to a clear base stock of not more than 67-octane rating. The refining division considers the information required by Section 1504.16 to be unnecessary with respect to this type of gasoline. Further, in order to provide for the immediate handling of emergency deliveries to the War and Navy departments, the amendment provides for subsequent rather than antecedent notice thereof.

The amendment of Section 1504.17 permits the holding of joint meetings of committees from different districts for the purpose of drafting plans for increasing the output of aviation gasoline where it is necessary or desirable that such plans cover more than one district.

Lucey and Fair Sell Half Interest in Talco Refinery

DALLAS, Tex.—Clint Murchison and associates of Dallas last week acquired the outstanding interest of Lucey Petroleum Co., of this city, and Ralph E. Fair, San Antonio, Tex., in the Talco Asphalt & Refining Co., at Mount Pleasant, Tex., and in the Talco Pipe Line Co.

The purchasers previously owned a half interest in the Talco companies. Details of the consideration were not disclosed but it is understood that the transaction involved about $1,000,000.

The Talco company refinery has capacity of 10,000 bbl. daily. The pipe-line system consists of 50 miles of trunk line linking the Talco and Sulphur Bluff fields with the refinery and 60 miles of gathering lines.

Douglas P. Bailey Appointed District 2 Refinery Chief

WASHINGTON, D. C., Jan. 12.—Douglas P. Bailey, now on the staff of the refinery division here, has been named director of refining for District 2 with headquarters in Chicago, Ill., and will leave to assume that post shortly. Mr. Bailey has been in the oil business since 1922 when he went with Standard Oil Co. of Indiana. Since 1927 he has been with Texas Co. except between 1934 and 1940 when he was superintendent of a refinery in France.

Aviation-Gasoline Goal May Be Revised Upward

WASHINGTON, D. C., Jan. 12.—Present plans for expansion of the refining capacity of the United States with respect to 100-octane aviation gasoline will be revised upward within the next few days as a result of President Roosevelt's announcement in his budget message to Congress of a vastly increased program for the production of military planes. This conclusion was announced late last week by Petroleum Coordinator Ickes.

Mr. Ickes revealed that under the present expansion program, production of military aviation fuel has already been increased to 52,000 bbl. daily, and the present goal of 150,000 bbl. a day will be reached on January 1, 1943.

The Army and the Navy, Mr. Ickes said, have been asked to make a resurvey of their requirements in the light of the new airplane program and are expected to report back to the OPC within the next few days. Revised estimates of our own military needs for 100-octane gasoline will be added to those of Great Britain, Russia, and other allies of this country, to reach the total for the new program.

Mr. Ickes expressed doubt that crude production could be pushed beyond the present rate of 4,100,000 bbl. per day without resulting in permanent damage to the oil wells of the country. He said that 5,000,000 bbl. daily has been mentioned as the outside limit, and added that he did not see how production could possibly be increased beyond that figure.

The petroleum coordinator stated that he was in favor of obtaining additional lead production from marginal mines through a system of premium prices to be granted individual lead mines where costs of production are above average.

With respect to the production of synthetic rubber, Mr. Ickes said that the most practical method of production is through the use of petroleum.

Isomerization Reduces Alkylate Requirement

CHICAGO, Jan. 12.—The volume of synthetic hydrocarbons known as alkylate required in the production of 100-octane gasoline may be reduced to 40 per cent of the total in the Standard Oil Co. (Indiana) new "isomate" process. This disclosure was made last week in a slightly elaborated review of the possibilities of the recently announced process which is basically one for the isomerization of naphtha.

"Until perfection of this process," the Standard announcement said, "100-octane gasoline was made by blending synthetic hydrocarbons known as alkylate and isooctane with isopentane, obtained from natural gas and special refined naphthas from selected crudes. About 65 per cent of synthetic hydrocarbons and isopentane, with 35 per cent of naphthas, was required to make the final product. In the new process the quantity of synthetics can be reduced to 40 per cent and the use of isopentane can be eliminated."

Col-Tex Refining Co. to Add Desulfurization Plant

OKLAHOMA CITY, Okla.—Col-Tex Refining Co. has completed plans for the erection of a 2,000-bbl. Perco catalytic desulfurization unit at the Colorado City, Tex., refinery. This unit will process straightrun distillate, including aviation base stock from West Texas crude.

Commercial plant operations on similar stock and pilot-plant tests from the Colorado City naphtha have given 94 per cent total sulfur reduction and shown improvement in lead susceptibility. By means of this process, Col-Tex will be in a position to increase the quantity and quality of the aviation-gasoline-base product.

Union Oil Co. Is Planning Refinery, Marine Expansion

LOS ANGELES, Calif.—Expenditure of $15,000,000 on refining and marine-transportation facilities by Union Oil Co. of California is envisioned in a registration statement filed by the company at the end of December covering 3 per cent debentures, due January 1, 1967.

The company did not elaborate on its expansion program in the registration statement but it was understood here that a portion of the revenue from sale of securities will be appropriated for construction of 100-octane gasoline facilities.

American Mineral Spirits Absorbs Refinery Affiliate

CORPUS CHRISTI, Tex.—American Mineral Spirits Co., Chicago, has absorbed its refining subsidiary, Amsco Refining Co., Corpus Christi, effective January 1, and from that date forward will operate the 12,000-bbl. refinery here directly. There will be no change in operating personnel.

Recycling News

Recycling Plant Proposed In Erath, Louisiana, Field

ABBEVILLE, La.—Plans for construction of a $2,000,000 recycling plant in the Erath field, southeast of here and one of the deepest producing areas in South Louisiana, were discussed last week by representatives of operating companies and the conservation department.

Companies seeking to unitize the area for construction of the plant include Phillips Petroleum Co., Humble Oil & Refining Co., Texas Co., and Tide Water Associated Oil Co.

The Erath field has an allowable of approximately 1,000 bbl. daily and some of the wells are completed at depths below 11,000 ft.

Cooperative Firm Organized for Reinjecting East Texas Brine

DALLAS, Tex.—Organization of the East Texas Salt Water Disposal Co. was completed here last Thursday with the formation of a firm capitalized at $25,000. The purpose of the organization will be to build additional injection systems of sufficient capacity to return practically all of the field's brine production to the producing horizon, thereby curbing the decline in pressures.

The attending East Texas operators named a committee of six men to serve as incorporators in completing legal details and selected Tyler as headquarters for the company. These men were: John G. Pew, Sun Oil Co.; Don R. Gladney, of Magnolia Petroleum Co.; E. H. Blum, of Atlantic Refining Co., all of Dallas; Bryan W. Payne and Joe Zeppa, independents, of Tyler, and David Frame of Humble Oil & Refining Co., Houston, Tex. These incorporators will serve as the firm's board of directors for the first year.

Subscribers of the $25,000 capital were: L. E. Barrow, of Texas Co., Houston; Al Meadows, of General American Oil Co., Dallas; A. E. Groff, of Shell Oil Co., Inc., Houston; George Nye, of Tide Water Associated Oil Co., Houston; C. R. Starnes, of Gladewater; A. M. McCorkle, of Stanolind Oil & Gas Co., Houston, and the six named incorporators.

An engineering committee was named to draft a proposed order to present to the Railroad Commission at a near-future hearing asking that transfer clauses be added to the commission's existing order. These proposed provisions would permit an operator to transfer the allowable of a marginal well or a large water well to another well on the same lease; or if all wells on a lease are marginal, the allowable could be transferred to another lease. Since some 500 wells produce 210,000 bbl. of the field's 400,000-bbl. daily water production, it is expected that the group will also ask for new rules permitting such wells to be closed in and their allowables produced by other wells. Such a provision would, of course, simplify the group's problems as the field's water production would be cut practically in half.

Plans for the $4,000,000 program call for a total of 85 injection wells, including the 47 systems now in operation with a potential injection capacity of 190,000 bbl. daily. It is optional to the system owner as to whether or not the system is sold to the cooperative company. All new systems to be added will have their injection wells located outside of the field, on the west side. (See The Oil and Gas Journal, Dec. 11, 1941, p. 34; Dec. 18, p. 24.)

Tire Restrictions Not Severe In Oil-Field Operations

(Continued from Page 19)

nance of production facilities." A recent ruling authorizes permits for trucks hauling gasoline as well as for hauling fuel oil.

To get a new tire or tube the following steps must be taken: The applicant has an authorized inspector who is engaged in the business examine the tire or tube to be replaced. In one Mid-Continent city, for instance, there are 24 inspectors and plans call for appointing two inspectors for each of the surrounding towns. The inspector signs a certificate for a tire if he finds that it cannot be retreaded, recapped or repaired and if the vehicle cannot be safely driven at the speed at which it must be operated to be effective. This certificate is on an application blank which demands compliance with rules. Compliance is indicated by information as to whether the vehicle can be replaced by any other vehicle belonging to the applicant not used for purposes within the eligibility classifications, whether the tire or tube will be used at once, whether tires in the applicant's possession provide not more than one spare per vehicle, and whether the replaced tire or tube will be disposed of according to certain instructions. The application is then submitted for action by the local rationing board. If it is approved, a permit is issued which is taken to the dealer when the tire is purchased.

According to information furnished from the office of Bert McDonel, Oklahoma state administrator of tire rationing for OPA, it appears that permits granted for new tires in Oklahoma are well within the quota for the state. A number of counties report that they are able to grant permits for all legitimate requests without any delay caused in procuring tires due to priority allocation. There is reason to believe that future rulings and interpretations will be coming from Washington which will prevent productive operations being hampered by lack of tires.

Alien Oil Interests Must Be Reported by January 31

DALLAS, Tex., Jan. 12.—Oil and gas interests owned by foreign nationals whether of enemy or friendly nations must be reported to the U. S. Treasury Department by January 31, according to instructions received from Washington by the Texas Mid-Continent Oil and Gas Association.

Under the final instructions of the Treasury Department, the lessee under a nonproducing-oil and gas lease must report any share of the royalty or mineral interest owned by a foreign national either as an original part or by assignment. With respect to a foreign national's interest in the royalty or mineral interest under a producing lease, the purchaser of royalty oil or gas should report. However, a lessee who collects payments for royalty oil or gas and accounts to the royalty owners, as under a 100 per cent division order, is regarded as the purchaser for purposes of reporting.

Set Date for Midyear Meeting of A.P.I.

The midyear meeting of the American Petroleum Institute will be held at Oklahoma City, Okla., May 25-28, 1942. Committee meetings will be held Monday and Tuesday, the first 2 days of the meeting, and a general session luncheon will be held on Wednesday May 27. Group sessions of the production and refining divisions will be held May 27 and 28. The board of directors will meet on Wednesday. Headquarters for the meeting will be at the Biltmore Hotel.

DEATHS

CLARENCE S. WILKINS, 70, consulting engineer in the oil industry, Tulsa, died last week in a Tulsa hospital. He had been ill for many years, and death followed a cerebral hemorrhage. Mr. Wilkins came to Tulsa in 1905 for Charles H. Moore Oil Co. He had contributed frequent articles to The Oil and Gas Journal. Four sons survive.

ROBERT H. BRADFORD, 61, vice president and treasurer, El Dorado Refining Co., El Dorado, Kans., died January 4 at a Long Beach, Calif., hospital. He had suffered from a heart ailment for the past 10 years, and had been critically ill since late in December. He had been in Long Beach for the past 11 months in the hope of regaining his health. In addition to his oil activities, he was president of the El Dorado National Bank. He is survived by his widow.

PETER KORBELLA, 26, engineer with Shell Oil Co., Inc., died January 7 at Midland, Tex., only a day after his arrival from Houston, Tex., to take over new duties in Midland. He had been with Shell since 1939 as mechanical engineer. He was in the production department at Houston prior to his transfer to Midland.

GEORGE STEWART, 62, veteran employe of National Transit Co., Oil City, Pa., died last week at his home in Oil City. He had been with National Transit for more than 30 years. His wife, a daughter and a son survive.

SAMUEL JOSEPH POLHAMUS, 76, Kansas and Oklahoma independent oil producer, died December 17, at Wichita, Kans., of a sudden heart attack. He had been in ill health since suffering a broken knee and hip in an automobile accident last February. He and Mrs. Polhamus, who survives, had celebrated their golden wedding anniversary last October. A native of Pennsylvania, Mr. Polhamus came to Oklahoma in 1913. In 1919 he became a partner in the Smith & Polhamus Co., independent producer, and was active until he suffered his accident. In addition to his widow, two sons and two daughters survive.

THE MARKETS*

CRUDE OIL: Payment of bonuses for crude oil was ordered discontinued last week and purchasers instructed to observe the general order to hold petroleum prices to levels prevailing November 7, 1941. Competition for connections in several areas is brisk, posted prices are firm. First prices were posted for the Pickens-Sharpsburg (Mississippi) field, ranging from 68.5 cents per barrel to $1.005.

REFINERY PRODUCTS: Refusal of Leon Henderson, price administrator, to permit an advance in the residual-fuel markets on the Gulf and East Coast, indicated more clearly than ever that product prices are pegged at or near present levels. Refiners throughout the country, particularly east of the Rockies, held quotations firm at unchanged levels.

TANK WAGON AND POSTED DEALER: Unsettled conditions in the Middle West tank-wagon market continued. Prices were advanced at one point and lowered at four. Distributors in Maryland and Virginia, adjacent to the District of Columbia, were authorized to raise tank-wagon prices 0.5 cent per gallon to equalize a tax differential.

FINANCIAL: The decline of oil securities continued last week. Average of 30 representative stocks for the week ended January 10: High, 23.92; low, 22.55; close, 22.81. Week ended January 3: High, 24.10; low, 22.39; close, 23.29.

*Detailed information in the Market Section.

CUMMINS DIESEL *Selected*

to Power Unit Rig's New Motorig

As the source of power on the Motorig, probably the largest self-propelled drilling rig in the world, the Unit Rig and Equipment Company used three 200 H.P. super-charged Model H S Cummins Diesel Engines. These engines were selected for the Motorig on the basis of their rugged dependability and high H. P. output in combination with low weight, plus their proven past performance records on other types of rigs.

Wherever exceptional oil field power requirements must be met, you will find Cummins Diesel Engines on the the job.

Exclusive Distributors in the Mid-Continent Area

MID-CONTINENT SUPPLY CO.

General Offices: Mid-Continent Building—Fort Worth, Texas

ENGINEERING AND OPERATING SECTION

JANUARY 15, 1942

EXPLORATION • DRILLING • PRODUCTION • TRANSPORTATION • REFINING • NATURAL GASOLINE MANUFACTURE

Shell Oil Develops New Type Slim-Hole Rotary Rig

By HARRY F. SIMONS

Rotary drilling machinery has been brought to its present excellence by a gradual evolution which resulted from the constant work of oil companies and equipment manufacturers. The goal has always been to increase the operating efficiency and decrease the moving costs.

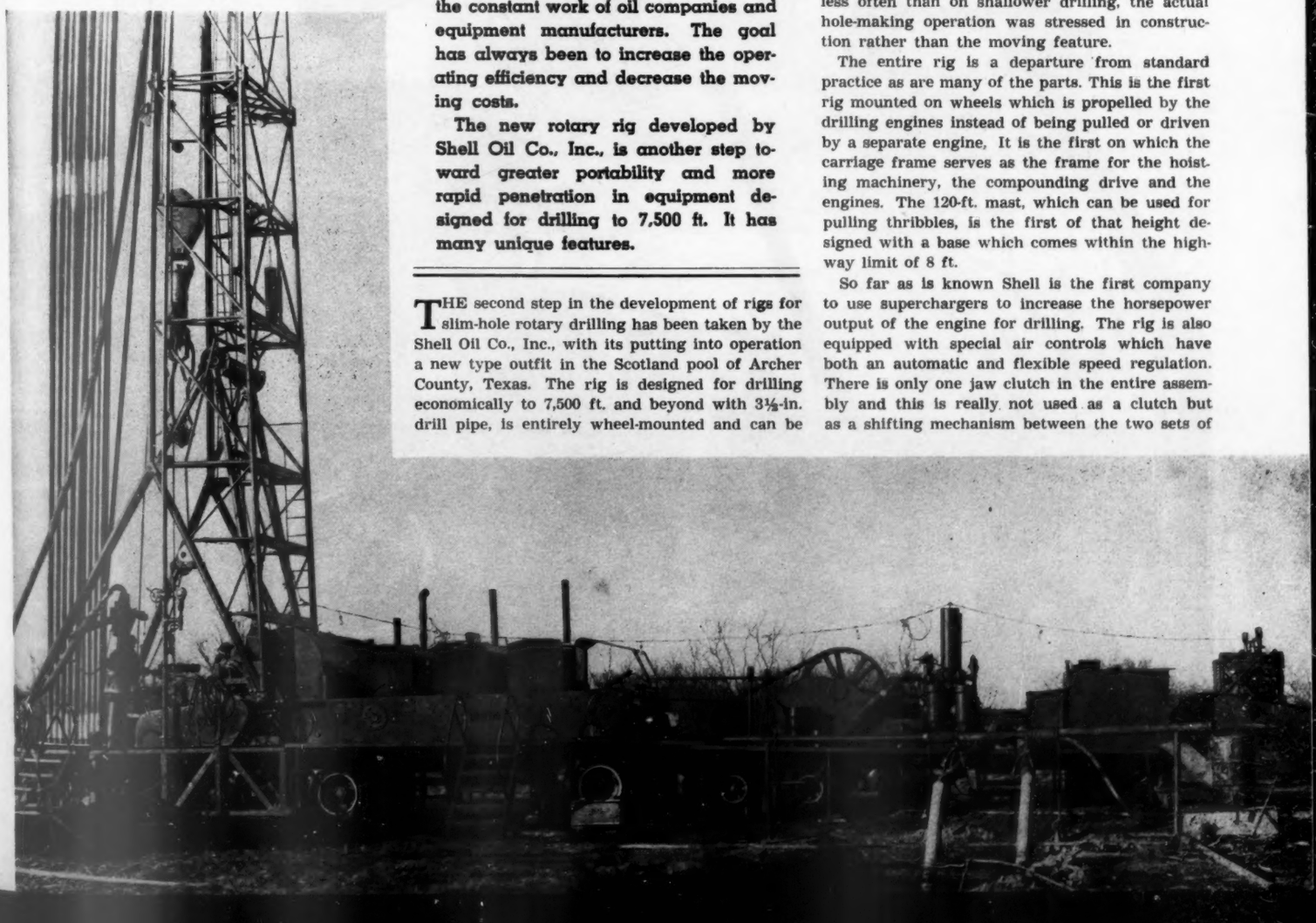
The new rotary rig developed by Shell Oil Co., Inc., is another step toward greater portability and more rapid penetration in equipment designed for drilling to 7,500 ft. It has many unique features.

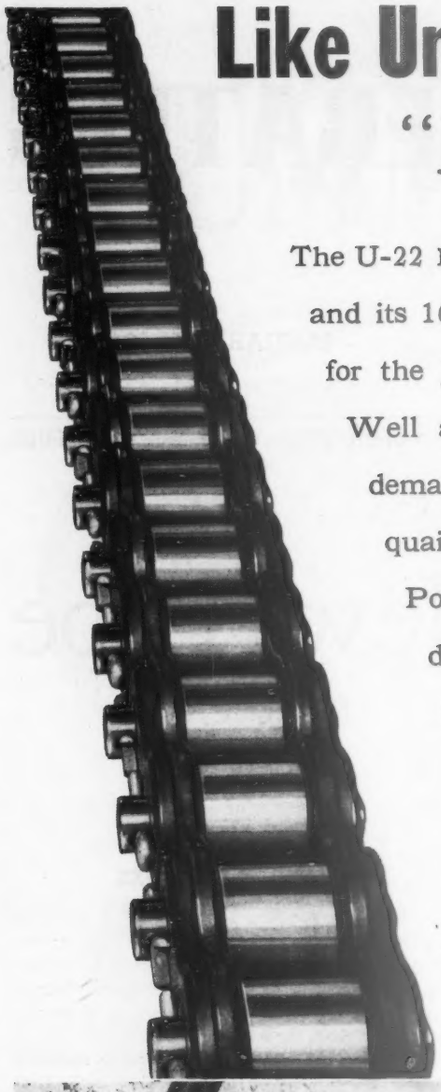
THE second step in the development of rigs for slim-hole rotary drilling has been taken by the Shell Oil Co., Inc., with its putting into operation a new type outfit in the Scotland pool of Archer County, Texas. The rig is designed for drilling economically to 7,500 ft. and beyond with 3½-in. drill pipe, is entirely wheel-mounted and can be assembled in a few hours after arriving at the location. Because the equipment will be moved less often than on shallower drilling, the actual hole-making operation was stressed in construction rather than the moving feature.

The entire rig is a departure from standard practice as are many of the parts. This is the first rig mounted on wheels which is propelled by the drilling engines instead of being pulled or driven by a separate engine. It is the first on which the carriage frame serves as the frame for the hoisting machinery, the compounding drive and the engines. The 120-ft. mast, which can be used for pulling thribbles, is the first of that height designed with a base which comes within the highway limit of 8 ft.

So far as is known Shell is the first company to use superchargers to increase the horsepower output of the engine for drilling. The rig is also equipped with special air controls which have both an automatic and flexible speed regulation. There is only one jaw clutch in the entire assembly and this is really not used as a clutch but as a shifting mechanism between the two sets of

New rig of Shell Oil Co., Inc., drilling in the Scotland pool, Archer County, Texas. Main portion of the rig is on a self-propelled unit, while pumps and fuel tank are on a semitrailer





Like Unit Rigs—Diamond Chains are *"Designed for the Job"*

The U-22 MOTORIG, the world's largest truck-mounted high speed drilling rig, and its 16 Diamond Drives, are living up to the Unit Rig slogan "Designed for the Job" and are doing outstanding work for Shell Oil Company, Inc. Well acquainted with oil country requirements and with the exigent demand for oil production, Unit Rig engineers are equally well acquainted with the dependable performance of Diamond Roller Chains. Power for truck propulsion is derived from the Diamond Chain driven, continuously compounded drive system.

DIAMOND CHAIN & MFG. CO., 475 Kentucky Avenue, Indianapolis, Indiana. Tulsa Office: 2238 Terwilleger Boulevard.

"WHEN LEADERS GO TO MARKET DIAMOND DRIVES ARE SELECTED"

DIAMOND ROLLER CHAINS

gears. All other clutches are of the friction type and the majority of these are air actuated. The drilling rig is entirely chain driven, the only gear being in the rotary table.

The derrick base, the method of handling the crown block and the provisions for raising the derrick are also unusual. The crown block is described partially by the term "floating."

The rig was first conceived by the drilling and engineering departments of Shell Oil Co., Inc., as an answer to the problem of reducing drilling time and moving time while at the same time increasing the operating efficiency.

First consideration was the actual drilling operation as the rig is to be used on fairly deep wells in an area where the rate of penetration is not extremely high. This means that during most of the time, the rig will actually be rigged up making hole or performing some other necessary task. It is estimated that the rig may have to move between 15 and 20 times per year.

These figures indicate the importance of cutting the rigging-up time to the minimum. Normally rigs used to drill beyond 5,000 ft. cannot be moved and rigged up in a day's time and most of them require 2 days before drilling of the surface hole is begun. The new rig is designed so that it may be moved a reasonable distance, rigged up and put in operation in less than 8 hours. This means that in a year's time it will be possible to drill an additional well over what could be drilled if conventional equipment were used. However, the saving in moving time would not be justified, or gained, unless the efficiency during the drilling operation was at least equal or superior to the conventional rig.

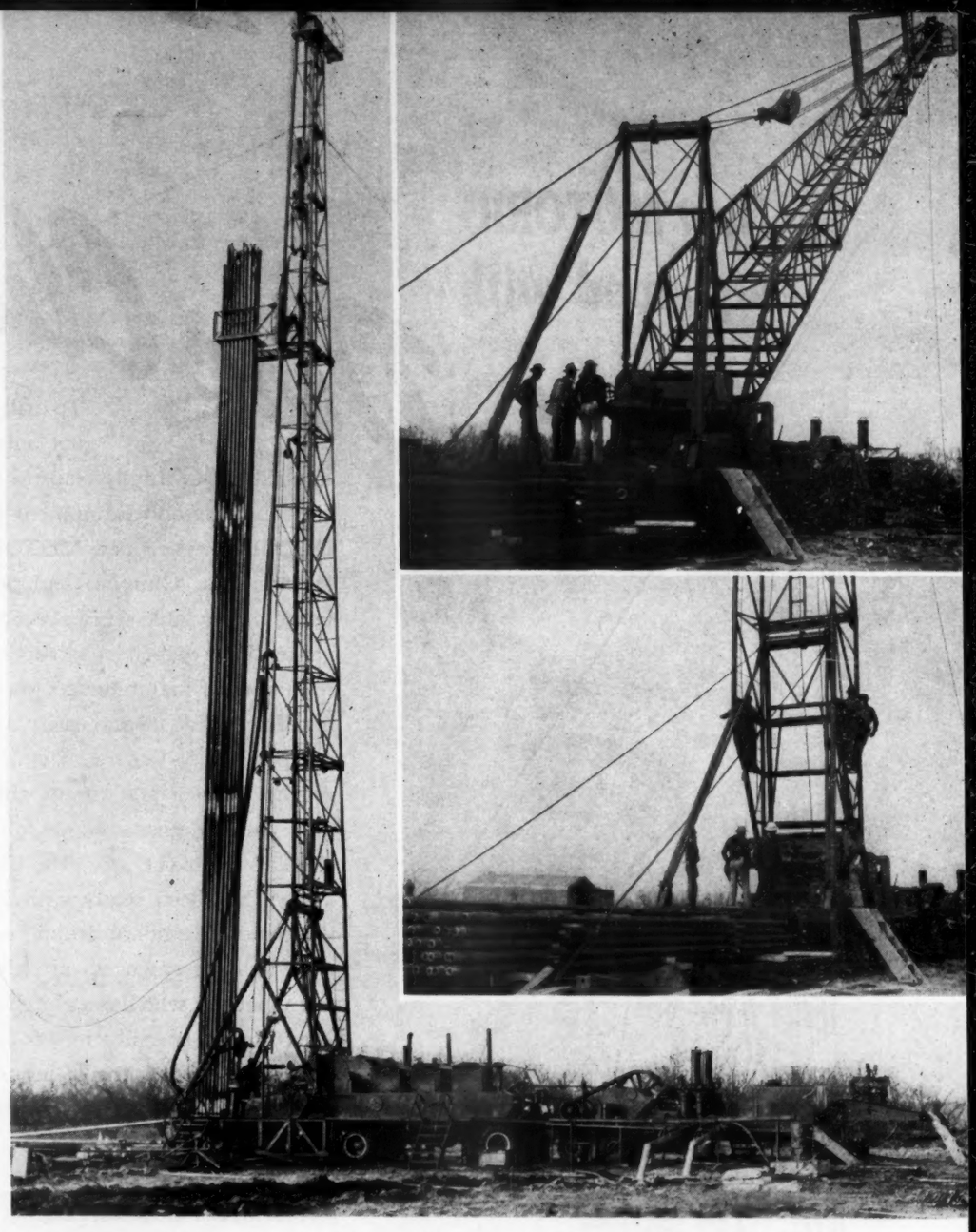
Rig Engines Power Truck

Originally it was intended to mount the hoist, engines, drive mechanism and lower section of the derrick on a specially designed frame equipped with axles and dual tandem wheels. However, the presence of wheels on which to ride and several engines with which to drive intrigued the Shell engineers working on the rig and they finally hit upon the idea of installing a takeoff from the rig-drive mechanism which connected to a specially designed truck-driving mechanism. A seat and a steering post and controls were located on the end opposite from the draw works.

The use of a portable derrick was also desirable as it eliminates the cost of erection and tearing down a drilling derrick for each well. Also, the entire rig could be put in action much quicker with a properly designed portable derrick than it could with a regular derrick. By building the 120-ft. derrick in sections, a part of it could be carried on the draw works and engine unit, another part on the pump trailer, and a third on a truck along with the substructure.

After outlining the over-all plan and figuring out how many of the problems in constructing such a rig were to be met, the Shell Oil Co., Inc., engineers began contacting various oil-field-machinery manufacturers to select a group whose equipment and designs could be best coordinated. The Unit Rig & Equipment Co. was given the assignment of building the draw works, engines, and compounding mechanism; Lee C. Moore Co. was given the task of building the sectional steel derrick; the Four Wheel Drive Auto Co. was chosen to build the chassis, and Hobbs Trailer Co. was given the job of building the semitrailer which carries two mud pumps and the fuel tank.

Despite the scarcity of material existing at the time and the necessity for correlating the efforts of numerous firms, it was possible to assemble and build the rig in less than 90 days. After a check at the plant, the main unit was moved under its own power from Tulsa to the Scotland pool southwest of Wichita Falls, Tex., in about 16 driving hours. Other parts of the assembly were moved by truck. Only very minor alterations were needed while assembling the rig.



Left and bottom: Making a trip on the 120-ft. mast is easily accomplished as thribbles can be handled. Upper Right: Raising the 120-ft. mast after the three sections have been bolted together. Bottom right: Bolting upper part of mast to raising A-frame which becomes part of the derrick

Drives on All Wheels

The chassis is equipped with a midship compound transmission and has three driving axles. The rear drive is of the bogey type. Each wheel is equipped with dual tires so that the machine has ample traction while moving over soft ground. Frame of the chassis is made from 18-in. beams as it also serves as the base for the rig.

The takeoff for driving the truck is located just ahead of the V-belt pulley used for driving the pumps. This takeoff shaft is equipped with an angle gear which drives into the truck shaft. One of the rig engines, any combination of them, or all of them can thus be used to power the unit. The clutch used for truck operation of the unit is also air actuated with the regulating valve being controlled by an ordinary foot pedal. Other controls include the throttle linkage to the engines and air brakes.

The draw works mounted on the truck was a Model U-10 Spitfire which was redesigned for the job. However, the changes were slight and were made when it was necessary for keeping the rig within the legal highway dimensions for length and width. One of the principal changes was the placing of the chain-driven transmission under the drum shaft instead of behind it. The friction clutch for driving the rotary sprocket was moved to the inside of the sprocket instead of being outside. The cathead shaft was also shortened slightly. The shaft usually placed in front of the draw works for drilling the rathole was eliminated as it was unnecessary. Actually, 90 per cent of the parts of the Shell rig are replaceable with standard parts from a regular model.

The compounding arrangement and drive to the draw works and pump is very simple. Each engine is equipped with a friction clutch between it and its compounding shaft. Each compounding shaft has two sprockets. One of these imparts the power from the engine to which it is attached and the other transmits the power from the other two engines. The throttle linkage is simple, consisting of a straight shaft with sprockets located at each engine. It is operated through a chain and sprocket on the driller's throttle control; positive synchronization of the engines is assured.

With the above arrangement it is a very simple

(Continued on Page 39)

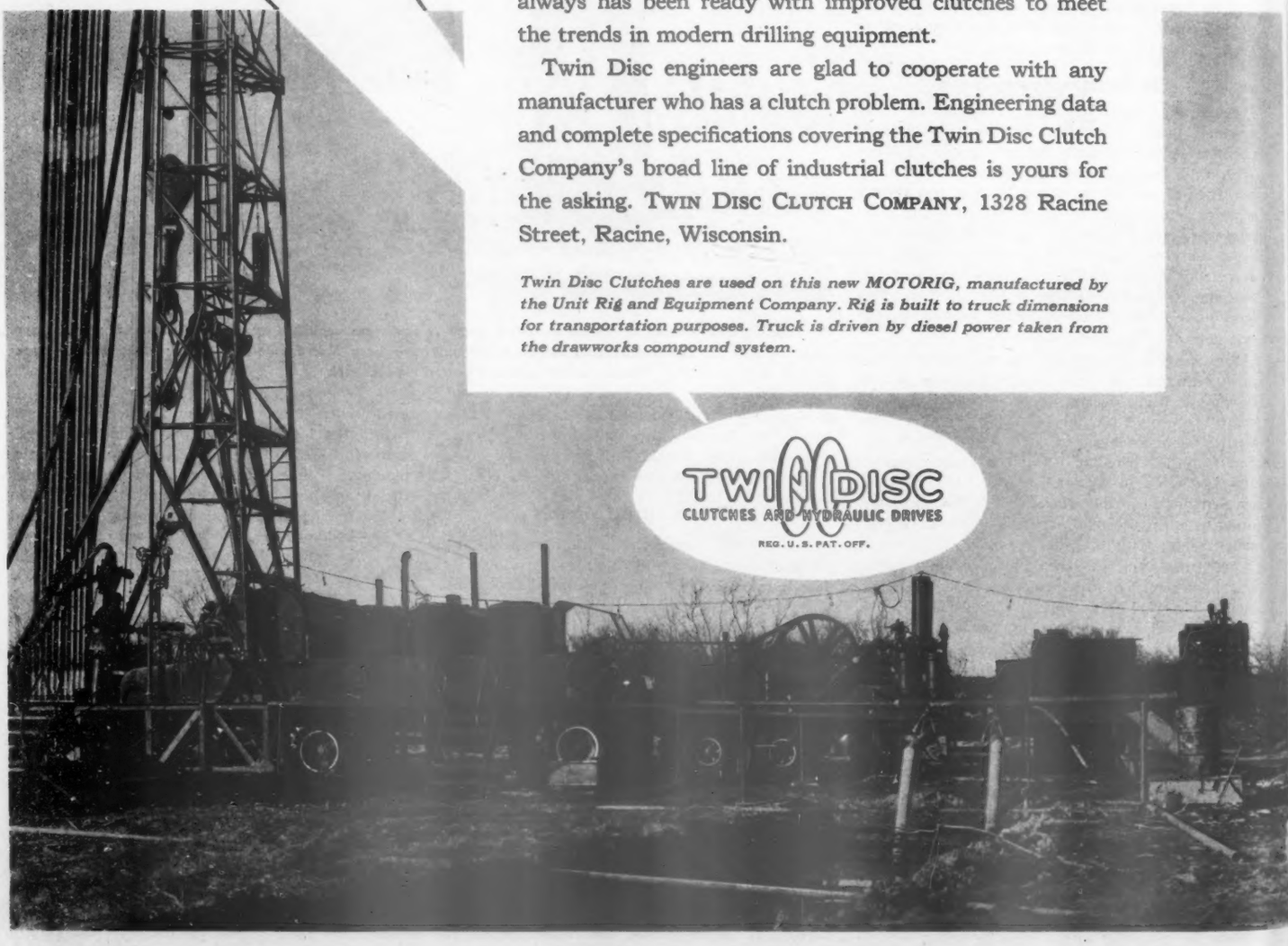
New MOTORIG equipped with Twin Disc Clutches

To drill deeper . . . faster . . . means not only more power economically applied but faithfully transmitted. That's one reason why the Unit Rig and Equipment Company chose Twin Disc Clutches for their new MOTORIG.

Twin Disc Clutches and power take-offs have established an enviable service record in the oil fields: *first,* because their rugged construction assures long life and a minimum of maintenance; *second,* adjustment is simple and fast, made at one easily available point and requires no special tools; *third,* Twin Disc Clutches transmit the full horsepower and torque characteristics of the driving unit; *fourth,* unswervingly following a policy of "building clutches to fit the job," the Twin Disc Clutch Company always has been ready with improved clutches to meet the trends in modern drilling equipment.

Twin Disc engineers are glad to cooperate with any manufacturer who has a clutch problem. Engineering data and complete specifications covering the Twin Disc Clutch Company's broad line of industrial clutches is yours for the asking. TWIN DISC CLUTCH COMPANY, 1328 Racine Street, Racine, Wisconsin.

Twin Disc Clutches are used on this new MOTORIG, manufactured by the Unit Rig and Equipment Company. Rig is built to truck dimensions for transportation purposes. Truck is driven by diesel power taken from the drawworks compound system.



matter to change engines in case one of them requires any major repair. With the clutch thrown out, only a few bolts have to be unscrewed, a truck with gin poles backed in, and the engine removed. The drilling operation need not be interrupted for more than a few moments. Operations can then be continued with two engines or another engine can be installed. Shell has found that the policy of changing engines and hauling the one needing repairs to a well-equipped, centrally located shop is much better than attempting major repairs on the job.

The use of three engines makes this both possible and practical as the remaining two engines allow operation of the rig at slightly reduced efficiency until repairs can be effected or another engine secured. The three engines also practically eliminate the possibility of not being able to get the drill pipe in the clear.

The engines are six cylinder, four-cycle diesels which have a rated output of 200 hp. at 1,800 r.p.m. These engines are equipped with supercharges which operate at 18 in. mercury of vacuum. Over longer periods the engines develop 150 to 175 hp. each for a total normal driving power of 450 hp. for rig operation. Each engine is equipped with its own closed cooling system and radiator. A central instrument panel with tachometers and pressure gages is used.

Six-Speed Transmission

In addition to the variable speeds obtained, a second range of six speeds can be obtained easily by changing the rotary-drive sprocket. This is installed in such a manner that it can be easily removed and replacements made. This is only necessary when unusually high or unusually low rotary speeds are desired and for normal operation the sprockets originally installed on the unit give a sufficiently wide rotary-speed range.

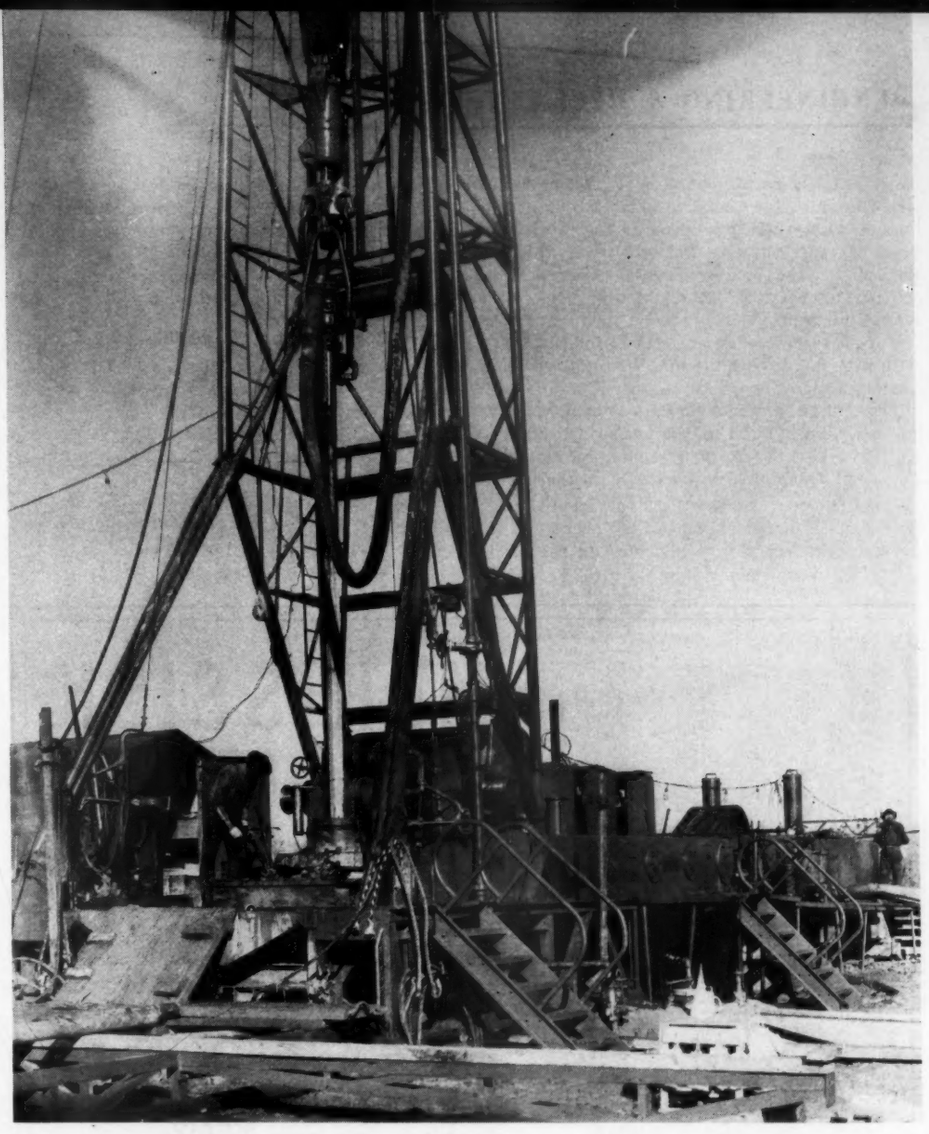
Because of its design, the transmission provides an unusually flexible speed control. There are three friction clutches on the input shaft from the engines, each of which controls a separate chain and sprocket drive to the driven shaft. The flexible speed control operates the friction clutches on the input shaft which permits the instant selection of any one of three speeds. On the jack shaft, a jaw clutch permits shifting from high to low or from one range of three speeds to the other.

Shifting from one set of three speeds to the other is possible while the rig is in operation but it is not advisable to do so.

There is only one chain from the jack shaft to the drum shaft, one from the jack shaft to the cathead shaft and the drive to the rotary table is direct from the jack shaft. Because of this arrangement, and the elimination of the usual drum clutch, the distance between bearings on the drum shaft is reduced to a minimum as it is on all other shafts. This also permits an over-all reduction in the width of the rig.

The cathead shaft is in front of the drum and in addition to the regular cathead has an automatic cathead and an automatic spinning line cathead which is controlled by fluid pressure. This latter cathead is in the middle of the shaft.

High-speed multiple-strand roller chain is used throughout the rig for transmission of power. Rotary drive and drum drive are through 1¾-in. pitch single and double chains, respectively, and all other drives, with one exception, are through triple-strand 1¼-in. pitch chain. The exception is the drive to the pump V-belt pulley which is a quadruple 1¼-in. chain. All of the chain linkages are short, thus reducing the amount of chain needed for complete replacement and automatically precluding any jumping of the chains on the sprockets even at the condition of maximum wear.



Closeup of derrick on new Shell rig shows how raising A-frame is bolted to the mast. Substructure bolts to steel rack which is loaded with drill pipe to make a counterbalance for raising derrick

Friction clutches used on the engines and in the transmission are of the regular disk type but the friction clutches for the drum and rotary drive are specially designed for the work which they perform. These clutches are air actuated and extra heavy with provisions made for forced air cooling. There is only one actuating part. The clutch engages smoothly and positively with a minimum of slippage even when an attempt is made to slam it in suddenly. The period of engagement can be predetermined so that it is impossible to shock load the rig. Use of this clutch makes it possible to build the working parts of the rig lighter and still have an adequate safety factor in operation.

The draw works and transmission cases are built as one unit and are welded to the main frame. The cases support the bearings with adequate reinforcement at the proper points. This eliminates the weight of jack posts and unnecessary pillar blocks. The shafts and bearings are all jig aligned to insure correct centers and parallelism.

The drum has an 18-in.-diameter barrel, a width of 38 in., and brake flanges with 10½-in. width and a diameter of 44 in. Drum speeds vary from 47 r.p.m. to 344 r.p.m. with a 50,000-lb. single-line pull at the former speed and 6,800 lb. at the latter. Hook speed ranges from 58 ft. per minute in the lowest gear to 425 ft. per minute in the highest gear with four lines strung through the blocks; with six lines the hook speed becomes 39 ft. per minute to 285 ft. per minute. Hook load varies from 255,000 lb. with six lines and lowest speed to 23,200 lb. with four lines and highest speed. Hoisting capacity is sufficient to handle 12,600 ft. of 4½-in. drill pipe or 16,300 ft. of 3½-in. drill pipe.

Pumps on Semitrailer

The semitrailer which carries the middle section of the mast, the two mud pumps, and the fuel tank is equipped with dual tandem wheels on the rear end. The I-beams used for the frame are 12-in. sections. The middle section of the derrick lies on special supports, one of which is welded to the hitching attachment. The derrick was designed and the pumps were so located on the trailer that when the derrick section is placed in the horizontal position, the air chambers are between the derrick legs and girts. During the raising and lowering of the mast the clearance between the derrick girts and the pumps is very small but is adequate.

The pump trailer is attached to the main unit by a pair of pins going through sets of saddles on both units. These pins fit hand-tight so that the units must be perfectly aligned before they can be inserted. This assures perfect alignment of the derrick and of the pump main-drive and driving sheaves.

Pumps used are 7¼ by 12-in. power pumps with a 4.70 gear ratio. These are set side by side lengthwise of the trailer. Each of the two pumps will deliver 539 g.p.m. at 65 s.p.m. and 373 g.p.m. at 45 s.p.m. As pointed out previously, practically any pump speed can be selected and the speed of the rotary table obtained by using the proper speed on the draw-works transmission.

The use of two pumps on a portable rig is un-

usual as the general method is to use one pump, repairing it while the drill pipe is out of the hole or while the rig is down. In the case of the Shell rig, there are no waits between wells anticipated so the pumps must be repaired while the rig is operating. In addition, the use of a second pump provides a medium for mixing mud and it also provides an emergency fluid capacity.

Sheaves for driving the pumps are located on a common shaft along with the drive sheave used to transmit the power from the companion sheave on the main unit. The shaft also is equipped with two clutches for operation of the pumps. This shaft is mounted transversely on the trailer.

These clutches are also the air-actuated friction type and are unique because they occupy so little space; in fact, they are located on the inside of the sheaves. From a single control located at the driller's position either or both of the pumps can be put on the line or taken off. Air connections for the operation of the pumps are permanently installed on the trailer and it is only necessary to make a pair of connections with quick-fastening unions when rigging up.

Floating Crown Block

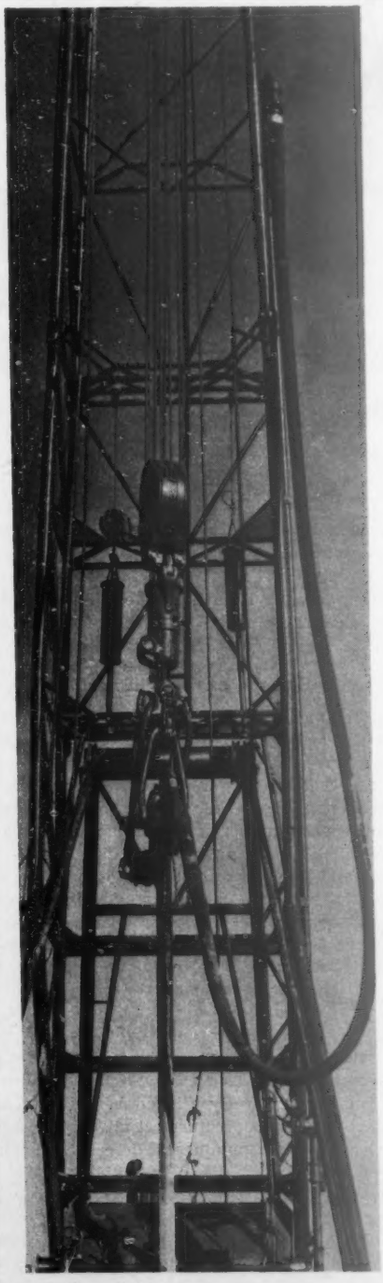
The derrick is made with 5½-in., 20-lb. tubular front legs and is of welded construction. Smaller tubular steel is used for rear legs, girts and bracing. All of the steel is either H-40 or J-55 and can be welded without preheating. The 120-ft. structure has a total weight of 16,000 lb. and is of the open-face type. The ladder is permanently attached while the run-around on the top and the hinged racking board are detachable.

An unusual feature of the mast is the floating crown, use of which makes it possible to leave the blocks strung up and the line attached to the drum when the mast is dismantled for moving. The crown is fastened to the top of the mast by an easily handled single pin. The crown frame is also equipped with skids while the mast has a built-in track, made of structural angles, running its entire length. At the conclusion of the drilling operation, the mast is lowered to the horizontal position and the pin removed from the crown block. The traveling block is anchored at the draw-works end and by winding the drilling line on the drum, the crown is pulled to the lower section of the mast where it is boomed in place for moving. A winch truck is used to pull the crown back to its operating position after the mast has been assembled on the new location.

Only 36 bolts are required to fasten the three sections of the mast together. Special dowled joints are used on each section to aid in aligning the sections and also to add strength to the structure. Bolts used for holding the mast sections together are placed through heavy eyes parallel to the derrick legs.

Provisions for raising the mast are also unique. The raising A-frame or gin pole folds down over the draw works on the main unit while moving and it forms the front bottom section once the mast is raised. Bottoms of the front raising legs are fastened with pins to a portion of the derrick-floor platform while the rear legs are hinged on the draw works. Pull of the derrick on this raising leg is counterbalanced by about 3,500 ft. of 3½-in. drill pipe stacked on the special steel rack.

After the raising frame, or erection gin pole, is in place, the hook and block and the dead line are anchored while the drilling line from the drum passes over a sheave at the top of the erec-



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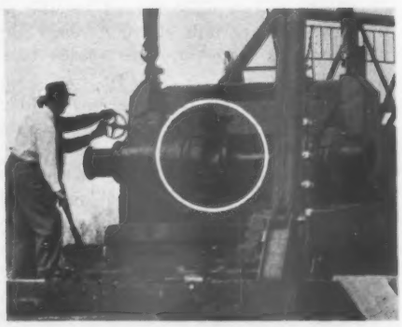

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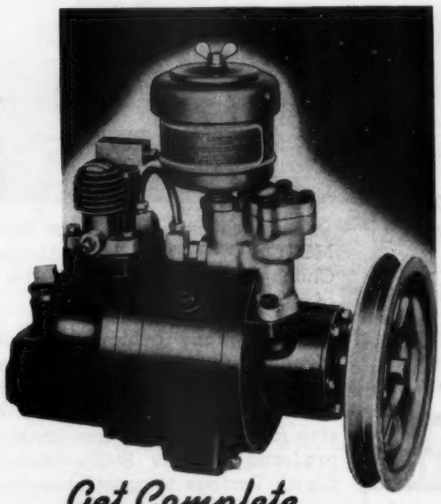

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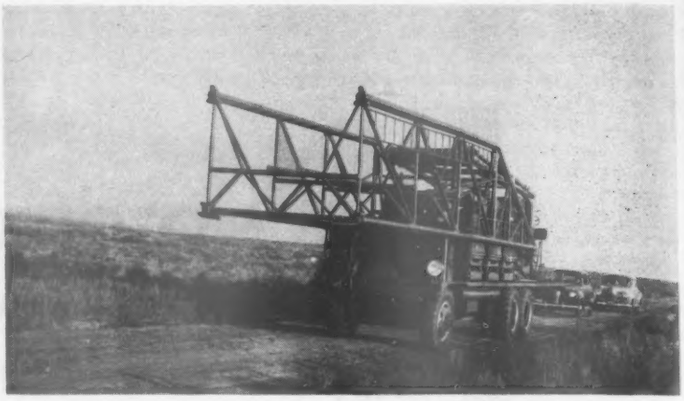
tion gin pole. A snatch block about 30 ft. up from the base on the mast frame also guides the line. The mast is then raised by spooling the drilling line on the drum. Heavy machine bolts are used for fastening the erection gin pole to the main portion of the mast.

The rig was completely assembled for the first time on the location. Only minor adjustments were necessary and were readily made. Fitting of pump suctions and other such details were necessary on the first job but will not have to be repeated. So far the rig has never been moved except to drive it from the factory and there is no test as to just how long it will require to rig up. As the crew becomes more familiar with the job the moving and rigging-up time will be brought to a minimum.

The rig has been drilling for several weeks and has come up to expectations. Drilling time and time for making trips are comparable to rigs of standard design operating in the area and it is evident that when the crews get used to the operations, a decrease in well time will be effected.

Top: Over the road with the bottom section of the 120-ft. mast resting over the drilling engines. Second from top: With the three sections of the mast assembled the crown block is pulled up track into position and bolted there. Carrying the crown block in the lower section allows the blocks to remain strung while moving. Third down: Closeup of track on which crown block is slid into position. Photo also shows method of coupling sections of the mast and the dowel joints on the legs. Bottom: Drives to the two pumps are shown at left while right-hand pulley is for drive from compounding mechanism. Clutch for controlling one pump can be seen at left along with air hoses for its operation



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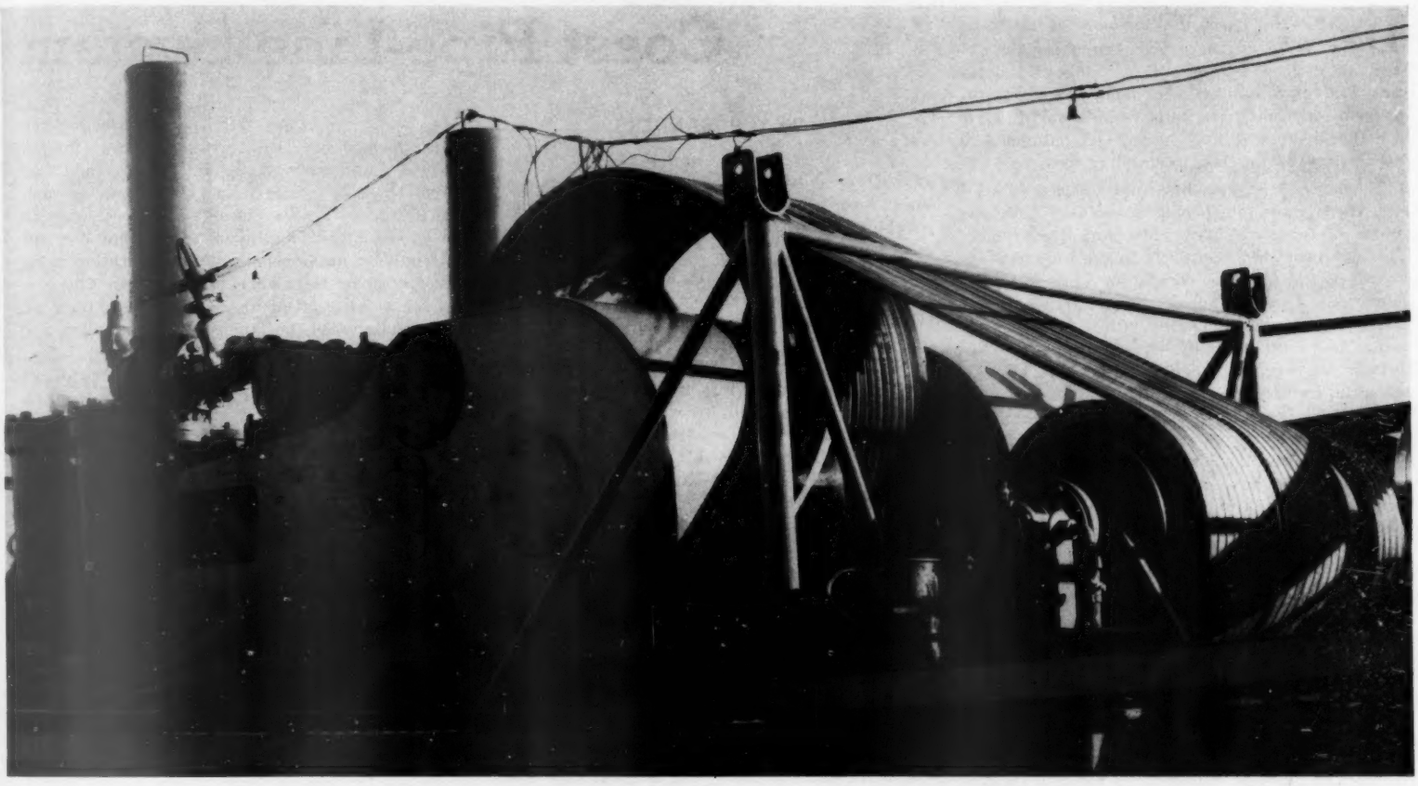

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Repairs and Maintenance Work Handled by Contractors .. on Pacific Coast Pipe-Line System

By T. P. SANDERS

DURING the early development of the pipe-line industry there grew up a certain system of doing business. With changes in detail only, this system has been handed down to the present day, perhaps with little thought as to whether or not it may have been outmoded at some time during the intervening years.

When the first pipe lines were placed in service, there were few people acquainted with any phase of the oil industry. Mechanical equipment was confined almost entirely to the big cities. As a result, the pipe-line companies were forced to operate in a self-sufficient manner, keeping available large crews of men with complete field equipment and specially equipped shops. Since crews and equipment could not be kept busy at essential work all the time, they were retained on much the same principle that a city maintains a fire department.

Now the conditions surrounding the operation of a pipe line have all changed. Men adept at practically any kind of repair or maintenance work can be found in the average community center. The necessary equipment items, such as welding apparatus, are widely used in the repair of water systems, irrigation projects, farm machinery and motor vehicles, and are therefore readily available. And finally, good roads, good vehicles, and good communications have greatly extended the area that can be served by a working force of men and machines.

Believing that general industrialization in the country has opened up new possibilities in the conduct of pipe-line maintenance work, a California concern has broken with the long-established system of doing business. Instead of retaining a complete organization for meeting emergencies of pipe-line maintenance, this company uses contractors to repair leaks and line breaks and to perform most of the other miscellaneous tasks along the rights-of-way. A sharp division has been made between operation and maintenance. Operation is carried on entirely by company men, while contracts are let to cover the maintenance work.

Difficult to Change System

It is human nature to resist change. Long-established practices tend to hang on long after the conditions which justified their inception have been removed. The larger the organization, the greater this tendency becomes. Thus, in every large company the key man attempting to make a change encounters a definite resistance within his own organization.

Any change is sure to inconvenience some persons, at least temporarily, and the introduction of contract labor for maintenance work has been no exception. From the standpoint of both management and the employes, the long-standing system of retaining company crews for all types of pipe-line work is still the most convenient and satisfactory way of doing business. However, the management of at least one company believes that the contract method is advantageous from the corporation's point of view, for they state that while the cost of the individual job is increased, the yearly total maintenance cost is lowered. Since the contract system has now become fairly well established on this company's crude-oil lines, inconveniences have been ironed out and reliable contractors can be reached quickly for emergency work.

Operation of a pipe line is a straight-line activity, whereas maintenance is always characterized by peaks and valleys in so far as required man-hours of employment are concerned. Highest efficiency is achieved in a company when the regularly employed force is the maximum that can be kept busy at useful work 100 per cent of the time. All peaks above this norm of activity are then contracted. It is this principle that places pipe-line operation in the realm of company forces while maintenance, together with construction, becomes a contract activity.

This principle may appear to give all the advantage to the pipe-line company, since it seems destined to reduce labor turnover within the company to the minimum while placing this burden on the contractor. However, the contractor is engaged in general work and can approach a constant work-load factor by doing work for other concerns and individuals. Then too, labor turnover is less likely to be a problem to the small contractor than it is to the large company. The contractor usually has a wide acquaintance within his operating locality and knows of men who can conveniently intersperse a few days' emergency work among their other activities.

Selecting the Contractors

The first step in introducing the new maintenance system was to survey the territory along the lines to seek out the most readily available contractors at strategic locations. Enough contractors had to be found so that it would be unnecessary for any of them to travel long distances to do small jobs. Yet each contractor had to be given enough territory so that the volume of work therein would be attractive.

While it is necessary that the arrangement with each contractor be sufficiently remunerative to hold his interest, it is essential that the contractor does not depend upon the pipe-line company for existence. In other words, he must have sufficient business to subsist in his locality without the work offered by the pipe-line company.

For the portions of pipe lines that run through or near oil fields it has been easy to find contractors familiar with the type of work required. Through farming country it is necessary to find contractors engaged in the work most closely resembling pipe-line work. Contractors specializing in construction of irrigation projects, highway work, or welding may be found to have the necessary equipment and understanding.

A contractor who is tentatively selected is asked to write a letter to the pipe-line company describing his equipment, experience, availability, his rates, and his insurance coverage. If he is included in the arrangement, the company tries to keep him informed as to what work is in store for the future. Along with the repair of leaks and line breaks he is given such tasks as repairing tank roofs, fixing fences, cleaning boilers, cutting grass, and other jobs in which the time element is relatively unimportant. This cooperation helps the contractor to balance his activities. The contractor is also given the chance to bid on all larger jobs which he is capable of handling, and in the case of identical bids he is favored.

It is the duty of the pipe-line foreman to call out the contractor when work is to be done. In the case of emergencies, such as line breaks or leaks, the first-aid work is done by company line walkers and station attendants before the contractor arrives. In thickly populated areas like the Los Angeles Basin, it is considered necessary to keep more maintenance men on the company payroll in order to assure that the first-aid work will be accomplished quickly enough to avoid extensive damage. For the same reason, an arrangement is sometimes made with a second contractor in such an area.

Advantages

It is likely that at some future time the contract system of maintenance will be quite generally adopted by pipe-line companies. In an area traversed by several lines a contractor would have the chance of building up a well-rounded business confined largely to pipe-line work.

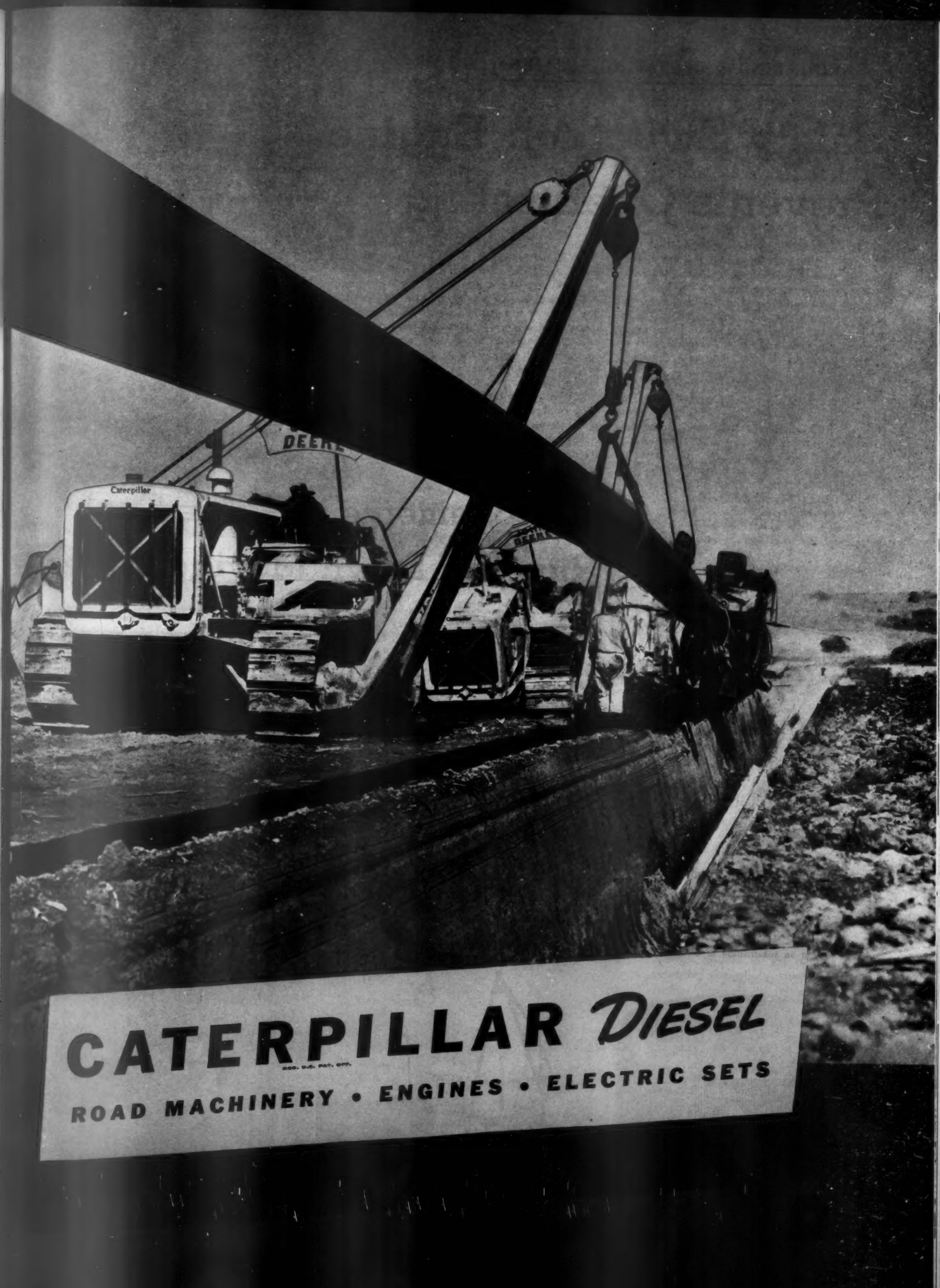
While the contract system at present has its problems for both management and labor, it is a factor to be reckoned with, since it is proving successful on a line where all types of problems are encountered. It is an old line, and it handles oil ranging in A.P.I. gravity from 11° to 40°, some of which is heated and some of which is run cold.

Essentially, the contract system enables the pipe-line company to stabilize its payroll, reducing costly turnover, and enables both the pipe-line company and the established local contractor to operate more efficiently.

The impression is often gained that contracting by oil companies means reduction of per-hour wages to labor, but this is not necessarily the case. Comparisons leading to this impression are usually made between the skilled company men, who are hired on a monthly basis to take certain responsibilities, and the unskilled laborers hired by the contractor to do tasks such as cutting the grass off of fire walls.

Sociologically the contract system is of some interest because it tends to promote permanent residence of workers in a given locality rather than fostering the migratory worker who is the product of rapid labor turnover.

In the pipe-line industry, as in any other industry, true progress is realized only when the products of the industry are brought to the consumer at a lower cost. The management of one pipe-line system believes that contracting of maintenance work is a step toward this end.



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Safety Switch on Engine Prevents Overheating

THE small internal-combustion engines, 10 to 75 hp., used for pumping oil wells and for moving oil to gathering points, operate with very little supervision. The pumper on the lease may have the opportunity to visit each well only once or twice during an 8-hour shift to check the operation of the engine and to see if it has ample water and sufficient oil. In the meantime the engine continues to run and failure of the water pump or a break in the oil system may cause extensive damage to the engine.

There are also many cases where the engine may run even longer periods without being checked. An accompanying photograph shows a twin-crank pumping unit set on a 12-ft. substructure. This places the engine and unit above the high-water mark in that particular river bottom; during high water it is necessary for the pumper to have a boat to get around to these wells. This means that the engine may be neglected for a considerable time while the water is rising and the pumper has to change to an aquatic worker.

The same thing applies to central-geared and band-wheel powers and to pipe-line gathering pumps but in a lesser degree. Generally the power or the pumping station is the hub of the pumper's or gager's activity and he drops by occasionally to check the engine. Also, because generally the engine used on the central powers and on the pipe-line pumps is larger, they are very often equipped with devices for shutting them down in case some trouble develops.

Many engines are built without safety devices which will discontinue service when there is any danger of damage. Others are equipped with safety devices but over a period of time these become damaged or inoperative or are removed for some purpose. Recently, in Illinois, several oil companies began to check into the problem and have begun to equip all of their engines with high-temperature and low-oil cutout switches. First ones equipped are those engines which are inaccessible or which receive the least attention.

The switches used are of simple design, and are shown in the accompanying picture. When the needle on the oil gage gets to zero it trips the switch just to the left of the oil gage; this switch in turn grounds the magneto and shuts down the engine. A similar switch to the right of the water-temperature gage performs similarly when the water temperature becomes excessive. The switches must be reset before the engine can again be started.

The particular device shown in the photograph can be adapted so it will flash a warning light in case the oil or water in a drilling engine reaches the danger point. The driller can then investigate and determine whether he must shut the engine down immediately or whether he can get the drill pipe out of the hole with it.

Frank W. Murphy, Mount Carmel, Ill., designed the switch and it is being manufactured in a machine shop in that town.

Pumping unit on substructure in a flooded area

Safety switches are at right and left of dials

Improvements in Cable-Tool Rigs Cut Down Moving Time

RECENT improvements in cable-tool rigs have placed them alongside the rotary rigs in efficiency of operation. The rotary still has the advantage as far as drilling the bulk of the hole is concerned, but the cable-tool rigs are preferred in a great many cases for completion work. There are also a large number of wells which have to be either deepened or plugged back and recompleted, and the bulk of these jobs are preformed by spudding machines.

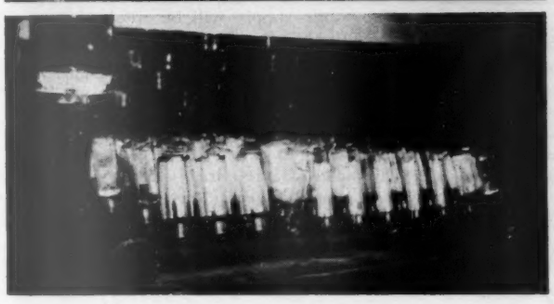
The more advanced types of spudders are very similar to rotary rigs and in fact many of them can be easily converted to rotary hoists. Cable-tool men, always an ingenious group, have readily adopted many of the ideas developed by rotary men and have devised methods of their own for performing particular tasks.

The accompanying photographs show two of the devices used by a drilling contractor in Illinois for cutting down his moving time when going from one location to another. Instead of the regular forge house, this contractor has a heavy skid to which a demountable frame for the crane is bolted. The crane structure consists of four 2-in. pipes which are topped by a pair of small A-frames made from 2½-in. pipe and a ridge pole. A roller and clevis on the ridge pole is provided for suspending the chain hoist with which to handle the bits.

When it comes time to move, the pipe frame is taken down and stacked on the skid. The remainder of the incidental tools, including forge, blower, light plant, bits and jars are also loaded on this platform which is winched on the truck.

Both the drilling line and the swabbing line can be quickly removed from the drums and wound on the reels by means of the device shown in the other picture. The reels are equipped with plates to which the drive shaft can be easily attached. This drive shaft has a pair of universal joints in it and is attached to a shaft driven by the power take-off on the truck. It is only necessary to back up the truck and slide the universal-equipped shaft over the truck shaft. The reel is thus made into a winch and pulls the line off the drum almost as fast as the tools can be pulled from the hole. Less than 30 minutes are required to spool 7,000 ft. of line on the reel. This is a variation of an idea widely used by pipe liners for utilizing a truck to drive pipe-threading dies.

Refinery IDEAS ... that save $ $ $

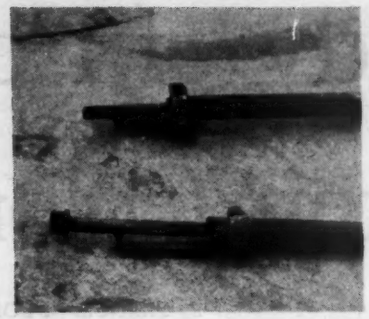


Bottle Washer and Drier

A large number of bottles are washed and dried simultaneously here. The washing unit consists of a basin approximately 9 ft. long with three pipes laid parallel along the length of the basin. Nipples are located along the pipes at intervals of several inches. Inverted bottles are placed over the nipples through which hot water is injected into the bottles. A similar arrangement, though shorter and with a larger number of parallel pipes, is used on the drying table and is shown here. Air is blown into the bottles after passing through a heater.

Conserves Welding Rods

This familiar homemade welding rod container is equipped with a hook as well as a handle so that it can be hung in a convenient position. It is doubly essential to conserve welding rods at this time.

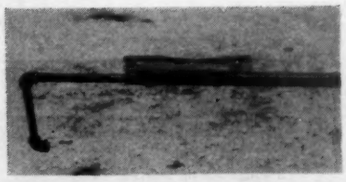


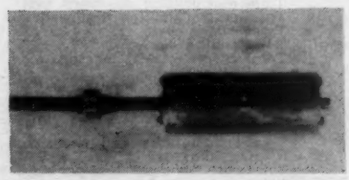
Clamp Nozzle in Hose

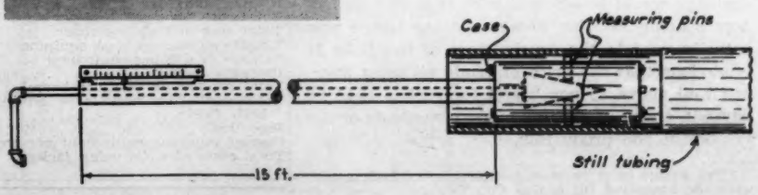
Attaching a steam hose to a pipe connection is simplified at a refinery by the use of this device. The hose is slipped over the pipe and through the curved plates which are drawn together by tightening the bolts. A bar welded to the pipe connection and to one of the plates prevents the hose from slipping. With the aid of a wrench, such a connection may be made in a few seconds and much more satisfactorily than by use of the customary wire.

Caliper for Still Tubes

This caliper is used for measuring still tubes. A cylindrical case (bottom) mounted on the end of a 15-ft. length of tubing holds three spring-mounted pins which are ejected or recessed as the case is moved forward or backward. The cone holding the pins is mounted on the end of a rod which is inserted into the tubing. At the end of the rod opposite the case there is an indicator which registers on a scale mounted on the tubing (top) the position of the cone which in turn is altered by the handle on the end of the rod.

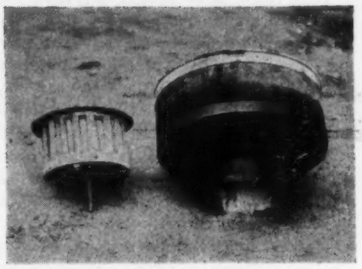




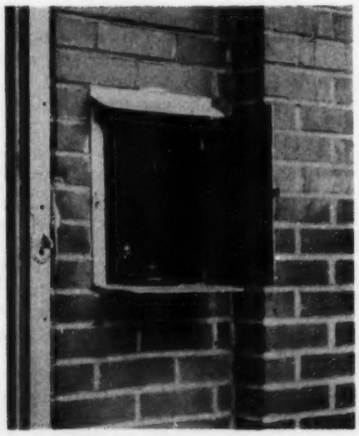


Remove Bottleneck On Percolating Filter

The throughput of old-type, small-diameter filters has been increased by replacing the small screens with screens having a much larger area of exposed surface. One of the old-types screens is shown at the left while its larger replacement, a screen made in the refinery shop, is at the right. The latter also allows for a much broader rate of flow control.



Handily Placed Phone Saves Operator's Time



The phone at this unit is used as much by operators outside the building as by those on the inside. The metal platform on which the phone stands is set in the wall, making the phone available from either side. It is protected by a metal door when not in use and by a metal awning when in use from the outside. This method of making the phone available also cuts down confusion in the office.

Cost Study of Fort Collins-Wellington, Colorado, Field

By FRANCIS N. BOSCO*
Petroleum Engineer-Geologist

The cost of oil exploration and production in Colorado has exceeded the field value of the oil over a period of 70 years. The Fort Collins-Wellington field, in northeastern Colorado, would have incurred an operating deficit of $750,000, had the price of oil been held at $1. These figures are indicative of conditions throughout the Mid-Continent and Rocky Mountain regions because the field is of a type common to both areas.

THE cost of producing oil in Colorado has been shown[1,2] to exceed the net value of reserves plus oil produced.

Data from these same references show: A cost of 24 cents per barrel in excess of the field value of the crude and reserves when produced. The proven-oil reserves plus production for the 70 years preceding 1932 (the last year in which complete cost data were available) equaled 54,154,000 bbl. The oil had a field value of $43,721,753, although the total cost of producing this amount of oil is $56,837,000. The net loss of $13,115,247 has been paid by wildcatters and others who may or may not have benefitted by the sale of the oil. Certainly any fair determination of the cost of finding and producing oil should include the cost of wildcatting.

A study is here presented of one of the best fields in Colorado, the Fort Collins-Wellington field. This field is 6 miles north of Fort Collins in northeastern Colorado. Production is from an approximate depth of 4,300 ft., and the producing horizons are the Muddy and Dakota sands in the Dakota formation. The structure, as shown in Fig. 1, is a closed anticline, with two separate highs. The pool was opened November 11, 1923, the first well yielding only gas. The entire field will be discussed in an article on eastern Colorado which will appear in an early issue of The Oil and Gas Journal.

It has been found that, for the 20-year period following discovery, using reasonable cost data as presented herein, the net loss to the producers would have been approximately $1,400,000 while producing 5,275,000 bbl. For the study it was assumed that market value was $1 a barrel, actually some of the oil sold for $2.50 a barrel, so that the field may have shown a profit.

Additional Cost Analysis

In order to determine the savings possible, using present engineering knowledge, the writer prepared a cost analysis with all other factors remaining the same, and assumed a modified slim-hole casing program. The value of the production, discounted at 8 per cent to date of discovery, was then $700,139. This illustrates effectively the value of advances made in operating economies in 17 years. To determine the maximum possible income which might be expected from such a field, the writer made a similar cost analysis using a 160-acre spacing program in place of the previous 80-acre pattern. All other data remained essentially the same. The present worth of this field, as of date of discovery was thereby indicated to be $1,489,562.

It will be apparent that the assumptions made herein are optimistic, particularly that the same drainage would be effected with 80 and with 160-acre spacing as with 40-acre spacing which was actually used in the development of the field. It is obvious that the price of crude oil must average well above $1 per barrel for such a field to pay out, even when using modern methods of development and production.

*The writer is at present completing an assignment with the Stanolind Oil & Gas Co., Tulsa.

The cost data presented in Table 1 needs some elaboration. The area to be covered is 15 miles north-south and 6 miles east-west, or a total of 90 sq. miles. One geologist and an instrument man can cover a section of land per day at a cost per month of $700. No camp expense is required as the geologists can live in Fort Collins. About 3 months will be required for the work of the geologists.

Cost of Development

Leasing of the 90 sq. miles with no bonus for the first year will cost about $1,100 for the land man and his expenses and for title investigations and recording. After the seismic survey only 35.5 sq. miles will be retained at a cost of $1 per acre with no rental the first year. Other leases will be abandoned as drilling outlines the productive limits of the field.

The area projected for the seismic survey is 90 sq. miles, 15 miles long and 6 miles wide. Reflections will be made on each section corner of the east-west lines and with 2 miles north-south spacing. Correlation shots will be made at each section corner on the north-south line corresponding to axis of both anticlines. This will give 63 shots with 7 shots for contingencies for a total of 70 shots. Time required, about 1 week.

TABLE 1

Total cost of geological survey	$2,100
Land and leasing	1,000
Lease bonus costs at $1 per acre	22,720
Second year leasing rental cost	23,820
Total cost of seismic survey	3,253
Total cost drilling discovery well	49,115
Total cost of drilling first well	30,141
Total casing cost	8,525
Total tubing cost	2,034
Total cost electrical logging	574
Total bit cost/well	1,400
Total camp water supply	19,410
Total building costs	15,050
Total camp fuel gas supply	2,910
Total cost of camp	38,170
Total road-building equipment cost	7,200
Road-building materials	3,960
Total cost labor and fuel per day	80
Total cost of building roads	15,010
Total well-maintenance equipment	4,750
Salvage of drilling equipment	13,186
Property salvage	8,700
Total production cost per barrel	.415
Total gathering and lease equipment for both fields	53,314
Pipe line	19,962
Cost of pumping equipment per well	4,324
Total costs of wells using jacks	2,756

A new rig will be purchased for the work at a total cost of $49,115. Costs applicable to one well include depreciation, pits, labor, drilling mud, fuel, cement, casing shoe, blowout preventer, electric log, casing, tubing, bits, derrick erection and compensation insurance. The casing program will include 200 ft. of 11¾-in., 60-lb. pipe, 3,280 ft. of 8⅝-in., 40-lb. pipe, and 1,230 ft. of 6⅝-in., 17-lb. pipe. Tubing used will include 3,000 ft. of 3-in. and 1,290 ft. of 2½-in.

Electric-logging equipment will need to be brought from Wichita, Kans., at a cost of $114. One 12¾-in. bit will drill the surface hole, eleven 9⅞-in. bits will be used to the casing point, and three 7⅞-in. bits for completion.

The water supply will be obtained by drilling and equipping three wells, each 300 ft. deep. A mile and a half of 4-in. and 2 miles of 2-in. water line will be needed. Fire-fighting equipment adds another $700. Gas for heating and cooking will be supplied from the wells but 2 miles of 2-in. and ¼ mile of ¾-in. pipe will be needed.

There will be required one two-lane highway, gravel surfaced, from Fort Collins to the north end of the field, a maximum distance of 15 miles. Twenty miles of lease roads will be necessary, single lane, not graveled. Tractor, grader, and two trucks will be purchased for the work and gravel will be used at the rate of 2,640 cu. yd. per mile at a cost of 10 cents per cubic yard. Cost of fuel and labor per day includes gasoline, motor oil, power shovel at gravel pit (rented), diesel fuel, two men to drive trucks, grader operator, tractor operator, and six laborers. The two-lane road will require 40 days to complete while the one-lane road will require 10 days.

Maintenance of the wells will require the purchase of a pulling machine with portable mast, tools for the pulling machine, and a clean-out string of tools.

Salvage of the drilling equipment for reuse will total 319,165 lb. at 6 cents per pound. The drilling equipment is depreciated as the wells are drilled. At the end of the third year the drilling campaign will be terminated and the salvage will be approximately $13,185. Other salvage includes camp, pumping equipment, storage tanks, motor and pump, pipe, well equipment (to be retired as production drops below marginal limit of 15 bbl.), and road-building machinery.

Operating costs are estimated at $0.128 per barrel, overhead costs at $0.16 per barrel, and royalty at $0.125 per barrel.

Cost of Lease Equipment

There will be a central gathering plant in each field. Each will be equipped with tank battery, oil and gas separators, lease boiler, and gathering lines. There will be 45,100 ft. of 3-in. and 31,000 ft. of 4-in. line buried below plow depth at a cost of $22,134. Other equipment includes two lease boilers, two boiler-feed pumps, two pipe-line pumps, ten 500-bbl. tanks, boiler house, four separators, and incidental connections.

It will be necessary to lay 2½ miles of 8-in. pipe

line from Fort Collins field through the Wellington field en route to the main line leading to Denver.

Drilling Program

During the first year 12 oil wells will be drilled, with 1,440 acres being developed. Three dry holes drilled during that year will outline the field. During the second year 16 more wells will be drilled to bring the total to 28 and 2 more wells will be added during the third year to bring the total producing wells to 30.

Pumping Wells

One engine will handle four wells by using one pumping unit with backside attachment and three jacks to be operated by pull-rod lines. Pumping equipment at the central well will include pumping derrick, 4,500 ft. of ¾-in. sucker rods, 4,500 ft. of 2½-in. tubing, a working barrel, gas anchor, beam hanger, 40-hp. gas engine, engine house, and labor. Cost of the wells with jacks will not be as high as this will include the rods and tubing plus 3,960 ft. of rod line and a mule-head jack.

Deep-Well Casing Programs

Casing programs have been one factor causing excessive costs of exploratory wells in this area. The large diameter, which is sometimes used to allow for anticipated difficulties in drilling, seems to be unwarranted here. Reducing the diameter of casing reduces the amount of material which must be excavated, so that savings in operating, casing, and drilling costs are possible.

This program requires considerably larger diameter casing than for "slim-hole" test, but it is small enough to result in considerable savings to operators.

Bit diameter	Casing size		Coupling o.d.	I.D.	Clearance for bit
12¾	11¾-in.	60 lb.	12.866	10.772	⅛
10⅝	8⅝-in.	30 lb.	9.593	7.775	5/32
7⅞	6⅝-in.	26 lb.	7.39	5.791	11/64
5⅝					

The 11¾-in. casing will be set deep enough to give safe anchorage to a blowout preventer and probably deep enough to shut off formation water when the flow interferes with drilling. Setting depth to be determined by location.

The 8⅝-in. casing will be set just above expected production, if formation conditions require. Otherwise drill-stem, or some other suitable test, will be made before deciding if casing should be set. The 6⅝-in. casing will be set below the 8⅝-in. casing if conditions necessitate.

Cementing

Oil-well cements of the ordinary slow-setting type should be adequate for the area. Occasional excessive formation temperatures have been reported. (Personal communication, Harry A. Aurand and C. F. Barb.). In the Greasewood area a casing-cementing job on a deep well (with a reported formation temperature of 223° F.) was attempted with quick-setting cement. As a result of this error, the casing was filled nearly two-thirds full of set cement. Proper engineering guidance would have saved this expense, as well as have eliminated the possibility of losing the entire investment.

Suggested Unitized Program

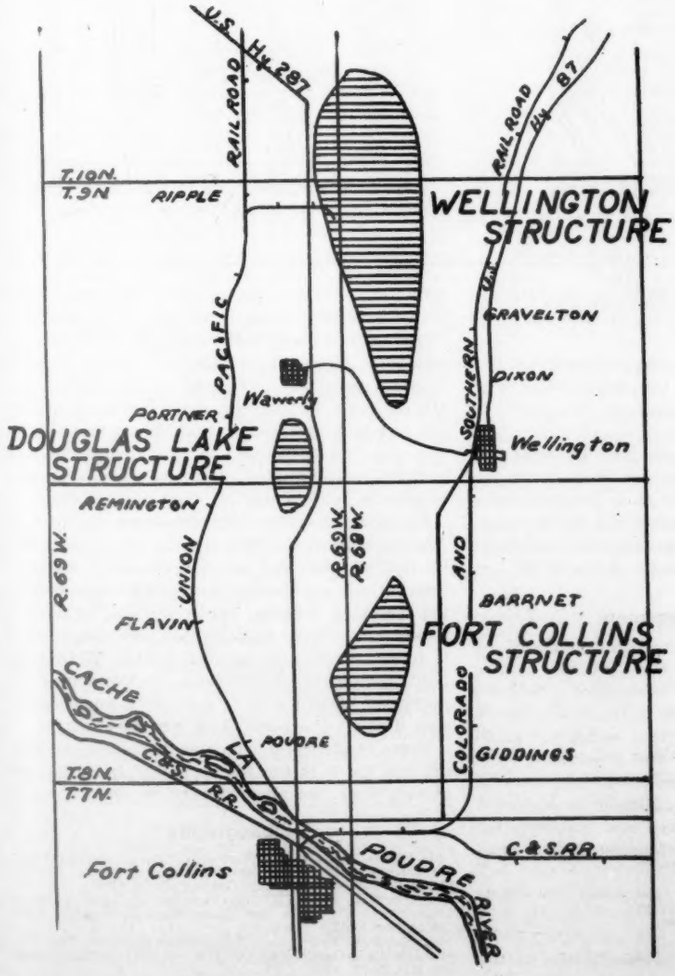
An ideal procedure in the development of closed anticlines is presented on the structural map of the Wellington field (see Fig. 2). The "ideally located" wells are those shown with large circles, the small circles are actual wells. The order of drilling is:

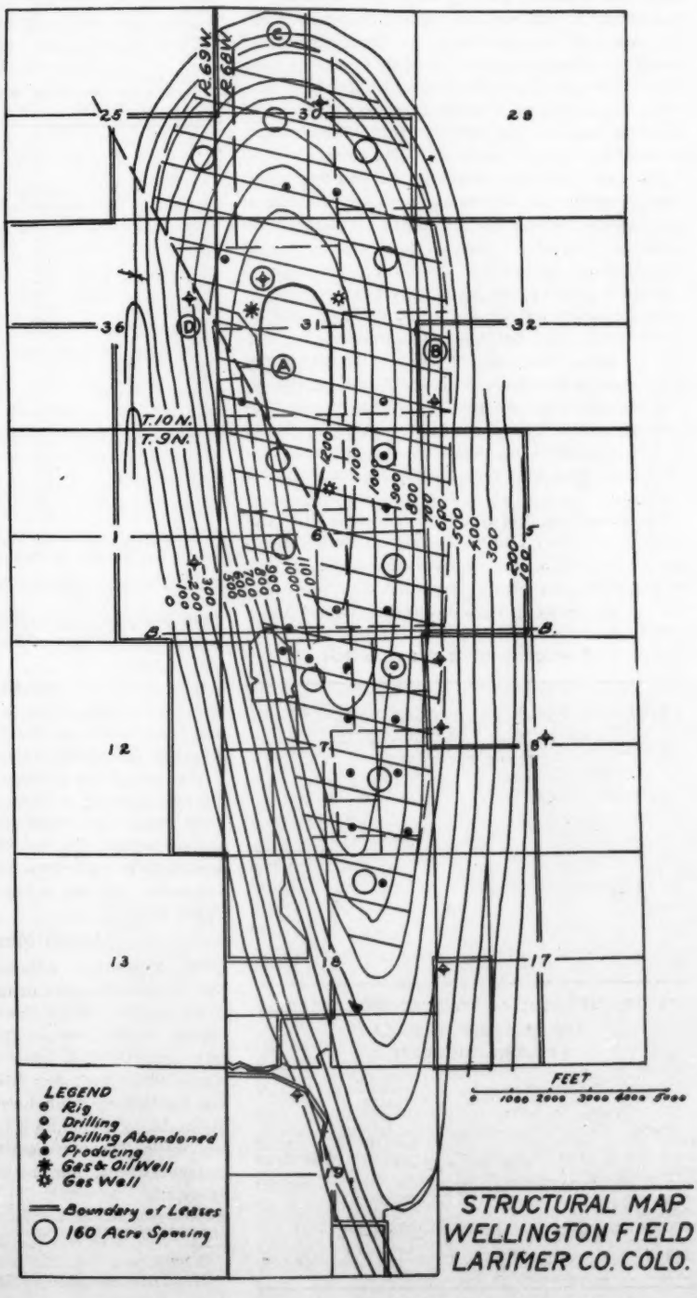
(A) First well, on top of structure, assuming oil will be found.

(B) The second, or first step-out well. Located east of "A" and one-half the distance from the top of the structure to the lowest closing contour. Again oil is found.

(C) The third or second step-out well. Located north of "A" and three-fourths of the distance

Fig. 1 (left)—Map of Fort Collins district showing the Wellington, Fort Collins and Douglas Lake structures. Fig. 2 (right)—Structural map of Wellington field showing drilling program as carried out and drilling program suggested





from the top to the lowest closing contour. The well is a dry hole and no oil is found. The oil area is now approximately defined, the shaded area on the figure. This area is then divided into any satisfactory equal-area units, and one well drilled on each unit in any convenient order, with fault conditions drilled as warranted. For convenience, 160-acre tracts have been selected in this case; probably about 80-acre tracts would be close enough for reasonably complete drainage in any Dakota producing field.

(D) If the fault had been indicated by surface exploration, this well would nevertheless have been necessary to determine the existence of oil between the contours on which wells "B" and "C" were drilled. The reason for this location is that oil limits in Rocky Mountain structures are generally found higher on the steep-dip, or mountainward, side of the structure. This well is also a dry hole, determining the western limits of the oil area.

A total of 17 wells, including 2 dry holes are drilled under this program. Approximately 3 years after the field is entirely drilled (assuming no proration, a test well is located between wells "A" and "B" to determine the completeness of reservoir drainage, as indicated by reservoir pressures. The indicated drainage will be used as a basis to determine if 80-acre spacing and inside wells should be adopted to adequately and economically drain all parts of the reservoir.

All water produced with the oil and not otherwise needed will be returned to the formation through the edge wells, to assist in maintaining reservoir pressure. Also, all gas will be cycled and all wells produced at optimum gas-oil ratio.

Such a program requires that land ownership must be in fee by the field operators, or that all landowners pool their acreage under unit control, or some other arrangement. It is anticipated that legal difficulties and individual greed or shortsightedness may prove insurmountable barriers in some cases. The plan suggested should lead to maximum net profit for the producer and landowner and also give maximum economic recovery.

The writer has prepared a 20-year over-all evaluation of the Fort Collins-Wellington fields, in order to furnish a cost comparison of the various well-spacing and casing programs discussed. The use of a casing program approximately corresponding to that actually used in the field, and 80-acre well spacing gives a net deficit for the field (assuming production at $1 per barrel), discounted to the date of discovery at $1,430,367. (See Table 3-B.).

The use of the modified slim-hole program previously recommended, and the same 80-acre spacing, calculated similarly gives a net profit of $700,139 (see Table 4-B).

The use of the modified slim-hole program, and 160-acre spacing to show the maximum profit possible from these fields (with an overoptimistic assumption that the same production would be obtained from each type of development program) similarly indicates a net profit of $1,489,562 (see Table 2-B).

VALUATION TABLE 2-A—160-ACRE WELL-SPACING AND MODIFIED SLIM-HOLE CASING PROGRAM

Year—	Acres developed (cumulative)	Wells drilled	Wells producing	Costs: Development*	Costs: Leasing	Costs: Drilling equipment	Costs: Wells	Costs: Production equipment
1924	1,440	12	9	$59,633	$22,720	$49,115	$361,692	$30,000
1925	4,000	16	16	.....	23,820	.....	482,256	29,962
1926	4,320	2	2	.....	.....	.....	60,282	13,414
1927	....	..	..	.....	.....	.....	.....	.....
1928	....	..	..	.....	.....	.....	.....	55,538

*Includes geology, geophysics, title investigation, camp, and roads.

VALUATION TABLE 2-B

Year—	Wells producing (cumulative)	Yearly prod. (bbl.)	Income: Sale of oil ($1 per bbl.)	Income: Total*	Operating, overhead and royalty ($0.415/bbl.)	Cost: Interest	Cost: Total	Net cash receipts	Cumulative present value†
1924	9	.....	.....	.....	.....	$31,389	$554,549	*$554,549*	*$474,515*
1925	25	436,054	$435,054	$437,094	$180,962	73,893	790,893	*353,799*	*777,841*
1926	27	1,220,975	1,220,975	1,222,465	506,705	89,324	669,725	562,740	*339,060*
1927	27	1,188,691	1,188,691	1,202,416	493,307	50,934	544,201	658,215	144,748
1928	26	1,032,040	1,032,040	1,035,180	428,297	.....	483,835	551,345	519,982
1929	25	822,236	822,236	825,366	341,224	.....	341,224	484,142	823,074
1930	15	488,733	488,733	518,873	202,824	.....	202,824	316,049	1,009,485
1931	15	365,001	365,001	365,141	151,475	.....	151,475	213,666	1,124,922
1932	15	287,836	287,836	287,976	119,452	.....	119,452	168,524	1,209,226
1933	15	246,113	246,113	246,253	102,157	.....	102,137	144,116	1,275,979
1934	14	186,967	186,967	190,107	77,591	.....	47,591	139,516	1,372,078
1935	14	140,798	140,798	140,938	58,431	.....	58,431	82,507	1,404,842
1936	14	118,608	118,608	118,748	49,222	.....	49,222	69,526	1,430,407
1937	12	88,184	88,184	94,324	36,596	.....	36,596	51,728	1,448,018
1938	11	68,202	68,202	71,342	28,304	.....	28,304	40,038	1,460,640
1939	10	52,615	52,615	55,755	21,835	.....	21,835	30,920	1,469,665
1940	9	41,411	41,411	44,551	17,186	.....	17,186	24,365	1,476,250
1941	8	31,369	31,369	34,509	13,018	.....	13,018	18,491	1,480,877
1942	7	24,215	24,215	27,355	10,049	.....	10,049	14,306	1,484,192
1943	6	18,680	18,680	21,820	7,752	.....	7,752	11,068	1,486,566
1944	5	14,730	14,730	14,870	5,964	.....	5,964	8,906	1,488,335
1945	5	11,163	11,163	14,683	4,633	.....	4,633	6,670	1,489,562

*Includes sale of oil, rental from houses and salvage. †Discounted to Jan. 1, 1924, at 8 per cent.
All red figures in italic.

TABLES 3-B AND 4-B

Year—	Three: Wells producing	Three: Total income*	Three: Interest cost	Three: Net cash receipts	Three: Cumulative present value	Four: Total income	Four: Total cost	Four: Net cash receipts	Four: Cumulative present value†
1924	15	.....	$64,041	*$1,131,394*	*$1,047,592*	.....	$650,398	*$650,398*	*$602,223*
1925	35	$428,094	153,968	*1,160,618*	*2,042,636*	428,094	926,874	*498,780*	*1,029,847*
1926	46	1,223,815	207,523	*150,413*	*2,162,038*	1,222,405	957,502	264,963	*819,511*
1927	55	1,330,001	219,344	*102,650*	*2,237,489*	1,292,416	959,351	333,065	*574,698*
1928	55	1,032,180	181,735	366,611	*1,987,581*	1,032,180	545,934	456,246	*243,769*
1929	52	855,366	151,118	362,961	*1,758,854*	831,366	365,501	465,775	49,748
1930	40	620,873	121,099	296,900	*1,586,616*	524,873	202,824	322,049	237,660
1931	40	365,141	100,204	113,462	*1,525,316*	365,141	151,475	213,666	353,097
1932	32	375,976	91,475	165,049	*1,442,750*	311,976	119,452	192,524	449,974
1933	32	246,253	93,956	50,160	*1,419,516*	246,283	102,137	144,116	516,160
1934	28	223,107	76,051	69,465	*1,389,724*	199,107	77,591	121,516	568,275
1938	28	140,938	70,733	11,774	*1,385,049*	140,938	58,431	82,507	601,039
1939	28	118,748	69,474	52	*1,385,010*	118,748	49,222	69,526	626,603
1940	24	132,324	68,845	26,883	*1,375,858*	100,324	36,596	63,728	648,300
1941	22	90,342	66,134	*4,096*	*1,377,149*	74,342	26,304	46,038	662,813
1942	20	74,755	65,919	*13,070*	*1,380,964*	58,758	21,835	36,920	673,590
1943	18	63,551	66,503	*20,138*	*1,386,407*	47,851	17,186	30,365	681,797
1944	16	50,509	67,466	*29,975*	*1,393,908*	34,509	13,018	21,491	687,175
1945	14	43,355	69,081	*35,775*	*1,402,197*	27,355	10,049	17,306	691,185
1946	12	40,820	71,090	*38,022*	*1,410,355*	24,820	7,752	17,068	694,847
1947	10	36,870	73,264	*42,358*	*1,418,769*	20,870	5,964	14,910	697,809
1948	10	17,303	75,726	*63,056*	*1,430,367*	17,303	4,633	12,670	700,139

*Includes sale of oil, rental from houses and salvage. †Discounted to Jan. 1, 1924, at 8 per cent.
All red figures in italic.

VALUATION TABLE 3-A—80-ACRE WELL-SPACING AND ACTUAL LARGE-DIAMETER CASING PROGRAM

Year—	Acres developed (cumulative)	Wells drilled	Costs: Drilling and pumping equipment	Costs: Drilling wells
1924	440	15	$55,000	$900,000
1925	1,160	20	.....	1,200,000
1926	1,760	11	.....	660,000
1927	4,320	12	.....	720,000
1928	....	..	55,538	.....
1929	....	..	.....	.....
1930	....	..	25,000	.....
1931	....	..	.....	.....
1932	....	..	25,788	.....

VALUATION TABLE 4-A—80-ACRE WELL-SPACING AND MODIFIED SLIM-HOLE CASING PROGRAM

Year—	Acres developed (cumulative)	Wells drilled	Costs: Drilling and pumping equipment	Costs: Drilling wells
1924	440	15	$49,115	$452,115
1925	1,160	20	.....	602,820
1926	1,760	11	.....	331,551
1927	4,320	12	.....	361,692
1928	....	..	55,538	.....
1929	....	..	.....	.....
1930	....	..	25,000	.....
1931	....	..	.....	.....
1932	....	..	25,788	.....

Lease Management

The Hamilton oil-operating plan, suggested by the former chairman of the Mid-Continent section, American Petroleum Institute, appears to be practicable for the isolated fields in the Rocky Mountain region.[3] "This plan is best suited for small leases where ordinary labor and supervising costs are excessively high because of the necessity of maintaining a complete organization to operate a few wells. The manager takes over the lease for a per cent of the profits. Suggested rate is as follows:

Barrels per month	300	400	600	1,000
Per cent of profit*	20	14	10	6

*Minimum

Thus the manager must increase profits to the lease owner if he himself is to increase his income. The manager acts not only as a consulting engineer, but also employs and supervises labor, sells oil and gas, and carries on all duties incident to lease operations, including accurate accounting. His success depends, upon the operation of a number of adjoining leases so that he can bring about economies of operation. The outstanding feature permits leases of widely varying types of ownership to be consolidated for economical control.

Secondary recovery includes those methods of increasing recovery beyond what can be obtained by natural flow, gas lift, and pumping. Methods used include gas cycling, water flooding, and perhaps mining. Limited applications of secondary methods have been made in this area. Gas cycling is being successfully applied to the Wellington field, with field supply being supplemented by purchase. Water flooding was given an inconclusive trial on the same field, and given up.

There is plenty of water available for flooding of most fields in the Rocky Mountain region, although some treatment may be required.

Bibliography

1. Bosco, Francis N., Petroleum Resources and Their Development in the Denver Cheyenne Basin; Thesis, Colorado School of Mines, Golden, Colo. 1941.
2. Brainard, A. E. Development of Oil-Producing Industry in Colorado, the Mines Magazine, pages 7-13, December 1932.
3. Sanders, T. P., New Lease Management Plan Facilitates Unit Operation, The Oil and Gas Journal, page 49, March 13, 1941.

Hydroforming Process Now Used on Commercial Scale

By M. H. ARVESON
Standard Oil Co. (Indiana)

THE hydroforming process is now being operated on a commercial scale. In its essentials this process consists of passing straightrun petroleum naphthas over a catalyst at elevated temperatures and moderate pressures in the presence of hydrogen-containing gases. The main chemical reactions involved are the aromatization or cyclization of the nonaromatic constituents of the naphtha.

These reactions are accompanied to a slight extent by polymerization reactions, and the combined effect of these various reactions is the production of a few per cent of "hydroformer polymer" of complex aromatic character. The general characteristics of this material are as follows:

A.S.T.M. distillation	Total "polymer"	80% overhead	65% overhead
Initial	448	438	428
10	465	462	457
20	472	467	461
30	477	471	464
40	484	475	466
50	490	479	468
60	501	483	471
70	516	489	474
80	545	498	478
90	620	515	485
(92)	750		
Max.		568	512
Specific dispersion	264	236	230
Gravity, A.P.I.	11.0	13.7	14.9

The high content of polycyclic aromatics is indicated by its boiling range and very high specific dispersion.

Although only a few per cent of this material is formed the volume of the material to be treated in hydroforming installations now under construction is so large that the total amount of the polymer will be significant. This material represents an entirely new commercial product. Its chemical composition is apparently quite dissimilar from that of hydrocarbon mixtures of similar boiling range from any known crude oils or from coal tar oils, shale oils, etc. Its characteristics indicate, however, that it may find various significant uses.

High-Boiling Rubber Solvent

In particular it is indicated that it has especially useful properties as an improved high-boiling rubber solvent. The following table shows comparative data on the swelling power of a typical solvent naphtha, a straightrun kerosene, and C.P. toluene compared with hydroformer polymer fractions.

Solvent—	Ratio of swollen to original volume
Solvent naphtha	2.1
Kerosene	2.1
Toluene	3.0
Hydroformer fractions:	
Total polymer	2.7
65% overhead	2.7
24% overhead	3.0

Various tests have indicated a large number of potential uses for this material and fractions thereof. It appears to be a satisfactory solvent in the manufacture of paints, lacquers, varnishes and other coating and impregnating compositions, especially where slower drying is desired, for example baking enamels. Certain fractions will be useful components of paint and varnish removers, polishes and very high boiling fractions will be found useful as plasticizers. Its use as solvent or plasticizer in connection with natural and synthetic resins, rubber, ethyl cellulose and bakelite compositions seems indicated. For example, chlor rubber is completely miscible in all proportions with the polymer. It is an excellent solvent for asphalt and gilsonite impregnating composition, for example, waterproofing concrete and the like. For electrical purposes it seems adapted for use as such or in blends with other oils for insulating oils and cable oils. In gas mains, solid hydrocarbon deposits are avoided by use of fogging oils which serve to keep the hydrocarbons deposits in solution—the polymer should be superior to the more paraffinic oils now in use. The total polymer may be used as such or as an ingredient in wood-preservative compositions, for example, blended with coal-tar fractions or as a carrier for pentachlorphenol or other fungicide, and has been shown to have a marked retarding effect on certain fungi which are responsible for decay of wood. It has also been found useful in preparing wood-staining compositions, as a vehicle for various dyes and pigments. Other fibrous materials such as masonite, fiber board, roofing and heavy wrapping paper, etc., can be protected against deterioration by moisture and attack by termites and other organisms by impregnating the material with the polymer or solutions in the polymer or its fractions of wax, asphalt, resins, fungicides or bactericides.

Insecticides From Aromatic Fractions

Insecticidal sprays and moth-repellent agents may desirably be prepared from these complex aromatic fractions. Printing, stencil, rotogravure and other inks and stains may be improved by the use of this new vehicle. The polymer and fractions thereof have been found to be very effective as absorber oils in the recovery of liquid or liquefiable constituents from incondensable gas streams by scrubbing at low or high pressure depending on the circumstances. Selected, very narrow-boiling, fractions of the polymer may be used as a heat-transfer medium in closed-circuit heating systems in the same manner in which diphenyl and diphenyl oxide are now used. The use of polymer as a gumflux in gasoline, as a flushing oil and in the stabilization of residual fuels against sediment formation is indicated. The polymer and all fractions throughout its boiling range have a very high antiknock rating in the vicinity 90 CFRM clear and blending octane numbers of 95-120. This material, or desired boiling-range cuts, may be used as such for special heavy internal-combustion engine fuels or may be blended with other fuels to increase their antiknock rating—tractor fuel for example.

This interesting new material will, as indicated above, be available in substantial quantities. Even assuming a yield of only 2 per cent of such polymer, the total amount which might be produced by hydroforming units in operation, under construction and definitely planned in the United States might be from 10,000,000 to 15,000,000 gal. per year. Compared to present United States production of creosote oils, probably the most similar material with respect to actual and potential use, this is a very substantial figure and it is believed that "hydroformer polymer" will become a material of substantial importance in the industry.

Another new potential source for similar materials suitable for the same purpose is cycle stock from catalytic cracking. By solvent extraction or equivalent procedures, paraffinic and naphthenic components may be eliminated leaving a mixture of materials of complex aromatic character. Generally speaking, this material contains somewhat higher boiling fractions and is therefore of wider boiling range than "hydroformer polymer." Because of the cost of segregation, this source of such material should be regarded as secondary though the quantities involved are many times larger.

Pipe Rack Allows Mud to Escape

WHEN drill pipe is pulled from the hole and the thribbles or doubles stood in the derrick, there is mud on the inside which eventually slides down the pipe and on to the pipe rack. By the time a long string of pipe is pulled from and returned to the hole, the pipe racker is standing in 1 or 2 in. of mud. Some pipe rackers bore 1-in. holes in the pipe rack to allow the mud to escape and others build the pipe rack on a slope so the mud can run off.

One crew uses the method shown in the picture. Insteading of placing 8 by 10-in. sills close together and then flooring with 3 by 12-in. heavy timbers, several 3 by 12-in. boards are laid flat on the floor and then about 22 of the 3 by 12-in. boards are placed on edge with ¾-in. blocks between them for spacers. This method results in a substantial rack for the pipe which fits well around the rotary table and which has plenty of space for the mud to escape.

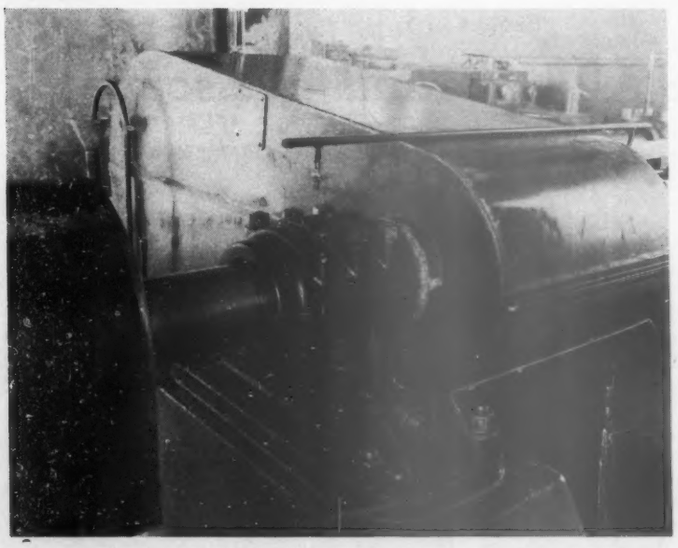
In freezing weather the pipe racker does not have to worry about his feet getting wet and cold. The pipe rack provides an excellent footing and the danger of slipping is almost entirely removed. Elimination of the mud from the rack prevents it from getting on the tool-joint threads and this adds to the life of the joints.

Pipe-Line Suggestions

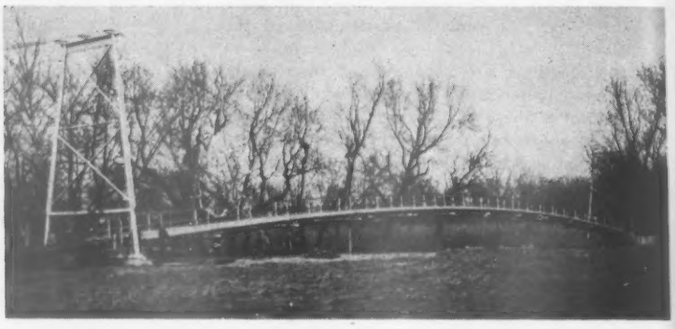
Gang Truck for Gasoline Pipe Line

For emergencies and maintenance pipe-line companies have built gang trucks which provide for dealing with the variety of conditions encountered. Special attention to such facilities has been given by gasoline pipe lines. The truck shown is representative of equipment of a major company in middle western states and Massachusetts. Gin-pole equipment mounted at the rear of the truck is of a type which has been found to be suitable for emergency repair work. The two-seated cab accommodates the whole gang. Boxes compactly hold tools of all types needed for repairs.

Adjustment for Pillow Block



Arrangement has been made for the adjustment of the position of pillow blocks at a crude-oil pump station by providing lineup screws. This equipment is being used in connection with a chain drive installed for transmitting power from a 700-hp. electric motor to a reciprocating pump. Four chains of a standard size are used with sprockets made at a local machine shop. The use of a chain drive made it possible to avoid the delays incident to obtaining gears under wartime conditions.



Vibration Eliminated by Pipe-Line Bridge

A bridge of a major pipe line has been rebuilt during the past year according to a design making it possible to eliminate vibration which had given the company serious concern because it was noisy and represented a hazard. The bridge is near the discharge side of a large pump station. It supports the following lines: two 8-in., one 10-in., and two 12-in. The bridge was originally built at the same high level between two towers to avoid damage from driftwood in periods of high water. However, it was found that the offset bends serving as risers were responsible for troublesome vibration. For a while an attempt was made to correct this by air chambers on discharge lines at the nearby station. By taking advantage of protection afforded by trees near the bridge it was seen that the bridge could be rebuilt so as to provide for laying the pipe on an easy vertical curve which eliminates offset bends. The center of the bridge is at the same height as that of the original bridge. As a result of the change in the bridge satisfactory operating conditions are assured.

Bulletin Board And Drinking Fountain

At the pump station of a Mid-Continent pipe line, an unusual provision for the convenience of employes has been made. This is a sheltered bulletin board located between the office and pump building. The spigot of the drinking fountain connects with a large thermos can which is held in an insulated box. It is necessary to ice this only once every 24 hours.

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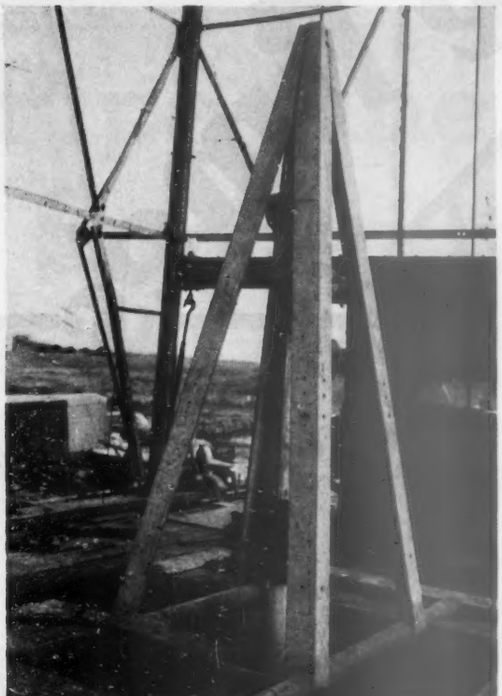
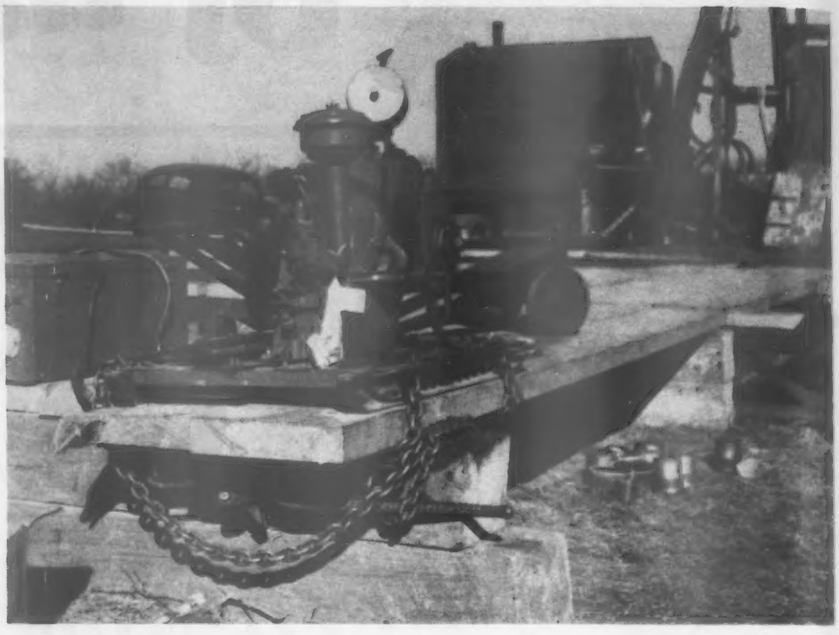


Protector for Christmas Tree

Tearing down or rigging up around a high-pressure well is always dangerous as some piece of the drilling equipment might strike the control connections hard enough to break them and allow the well to blow wild. An operator in the La Gloria, Texas, field has designed a special protector which is installed over the well connections before rigging up to work over is started. The guard is made from 4-in. angle irons welded to a base of 3-in. pipe.

Block Protects Weight Indicator

Many of the modern type of indicators in use at the present time include the diaphragm and the dial in a single unit attached to the drilling line and they sometimes get damaged. One crew installs a heavy wooden block immediately above the indicator. This block projects beyond the indicator face and beyond the diameter of the case and prevents the hose, catline or tong counterbalance from striking the indicator.



Unitized Measuring Reel for Power Rig

For the most part the measuring lines used on a drilling rig to run straight-hole tests are driven by a belt or rope operating between a sheave and the cathead on the rig. This is a source of danger as the rope or belt might foul and cause serious injury to a member of the crew. A major company is using a measuring reel driven by a small internal-combustion engine which is safer and more convenient. Engine and reel are mounted on a light skid which is anchored at the end of the walk where it is out of the way.

Operating Ideas

Overshot Guide Ingeniously Remodeled

When all efforts to get over a drill-pipe fish failed, one tool pusher remodeled the overshot guide in the manner shown. The side opposite the duckbill, or shirt tail, was cut back so a tip about 3 in. long remained. The tip was then bluntly pointed. It was hoped that the tip would enter the upper end of the fish, after which the overshot could be turned 180°, picked up slightly and then lowered over the fish. It was impossible to establish contact with the fish on several runs with the remodeled overshot, after which several tools which had been previously used were rerun. An overshot with an ordinary duckbill finally contacted the fish at just the right instant and went over it. The success or failure of the tool shown was never determined.

Progress in METALS

By W. L. NELSON

Salvage of Stainless Steel By Metal Spraying

Abstract: "How to Spray Stainless Steel," C. F. Benner (General Electric Co.) Iron Age, Vol. 148, July 17, 1941, p. 56. Taken from the October issue of Metals & Alloys.

THE metallizing process is particularly useful in reclaiming hydraulic rams, rolls, etc. Spraying of stainless steel is essentially the same as spraying plain carbon steel. The process as a whole consists of (1) preparation of base; (2) spraying of metal, and (3) finishing.

The bond between the base metal and the sprayed metal is strictly mechanical, and, therefore, depends on proper roughening of base metal, having the base metal absolutely clean, and finely atomizing the sprayed metal particles.

It has been the practice for hydraulic rams to undercut and thread or groove the surface thereby increasing the mechanical strength of bond. With pitted rams, the surface is first turned down.

Minimum Thickness

The amount of undercut depends on the size of the shaft and the thickness of the coat needed. Metallizing Engineering Co. has determined the following minimum coat thicknesses as dependent on shaft diameter:

Diameter	Minimum coating thickness
1 in. or under	0.010 in. on radius
1 in. to 2 in.	0.015 in. on radius
2 in. to 3 in.	0.020 in. on radius
3 in. to 4 in.	0.025 in. on radius
4 in. to 5 in.	0.030 in. on radius
5 in. to 6 in.	0.035 in. on radius
6 in. or over	0.040 in. on radius

After undercutting, the ram is threaded or grooved. Roughening with a special tool and cleaning free from oil or grease then follow.

A standard metallizing gun is used and No. 11 B.&S. stainless steel wire of the following analysis: 0.060 per cent C, 0.57 per cent Mn, 20 per cent Cr and 9.75 per cent Ni.

If the piece is 2 in. or under, it should be turned during spraying at a revolution per minute rate that will give a surface speed of about 35 surface ft. per minute, and carriage feed set at ⅛ in. per revolution. If the piece is over 2 in. in diameter, it should be turned at a revolution per minute rate giving a surface speed of about 50 surface ft. per minute, and carriage feed of 1/6 in. per revolution.

In places where much metal has to be removed to eliminate unsoundness, it is more economical to build these areas up with plain carbon steel and follow with stainless, so that about 0.040 in. of the latter will be deposited.

Plain Carbon Steels For National Defense

THE lack of adequate amounts of alloy elements for special alloy steels is becoming increasingly apparent as defense preparations go into high gear. For some time, perhaps even several years, elements such as nickel, chromium, vanadium, and manganese are not going to be available in as large amounts as needed. The particular properties that are imparted by nickel cannot be duplicated by any other element, although such elements as manganese, silicon and copper have actions that are somewhat similar to those of nickel. Manganese, however, is not available for this purpose, copper is not truly effective, and the use of silicon requires a drastic revision of most of the heat-treating operations that are now common in this country. Chromium and vanadium can be replaced with fair success by molybdenum, which fortunately is abundant in this country. Manganese is used mainly as a deoxidizer and scavenger for sulfur. Its action is almost indispensable except that to a very minor extent such elements aluminum, titanium, zirconium, vanadium or columbium have been used for the same general purpose as manganese.

The gist of the above is that somehow a greater use of carbon steels and molybdenum steels must be made because no amount of trading around among the scarce special elements is in the end going to result in complete freedom from shortages. H. W. Gillett has discussed this situation in the October issue of Metals & Alloys as follows:

"For a real surcease from scarcity of alloying element, it will be necessary to make a longer jump. It appears probable, according to Boegehold, that such steels as one with about 0.70 Si, 0.70 Mn, 0.50 Cr, 0.15 per cent Mo, with various carbons, will serve in place of almost the whole group of S.A.E. alloy steels for quenching and tempering, while one of 1.00 Mn, 1.00 Si and 0.12 to 0.30 per cent Mo will serve for case-hardening purposes. While the manganese and chromium contents might have to be driven down a bit and molybdenum upped a bit, should manganese and chromium become too scarce, yet the move is in the right direction. To make this move, intelligent disregard of present usage and present specifications, has to be had. The compositions are intelligent ones, they utilize the ferrite-strengthening power of silicon to replace that of nickel and the carbide-forming effects and the splitting up between, and the entry into both ferrite and carbide, of manganese and molybdenum are utilized to replace these effects that have previously been brought about by a heavy dose of chromium.

"In low-carbon structural as well as in the mild alloy steels, it should be feasible, since it is well proven in the latter case, to cut down on manganese and raise the phosphorus, which is a good ferrite strengthener. This replacement by phosphorus may not be entirely unusable even in some heat-treated parts, once we shake ourselves loose from old traditions and old specifications and consider merely the engineering properties needed in the part to be made."

In general, heat-treating departments of steel fabricators are loath to vary their heat-treating operations, or to explore the revisions that are necessary in adopting different steels from those being employed—and steel manufacturers hesitate to make up special heats. Thus, the tendency is to use some other commonly made and stocked S.A.E. steel which may also in some degree contain scarce elements. The general result is to create another bottleneck while in the motions of evading others. As an example, the substitution of chromium-vanadium steels for nickel-containing steels has brought about a tightness in vanadium and has not aided the already difficult chromium situation.

Heat Treating

In connection with details of heat treating, Gillett states: "Proceeding further along this line of thought, the real needs of the part in its final form, the use of any alloy steel for parts to be quenched and tempered in sections so small that they will harden through, should be scrutinized with care. And for carburized parts, the use of alloy steels in order to get a tough core—when tested without the case—is often quite unwarranted, since the piece seldom requires toughness anyway and the carburized part, as a part, isn't tough, despite the core, because a crack in the case will propagate through the core despite its alleged toughness. In heavily carburized parts the case is made thick, not because we expect to use all that thickness to provide material to be worn away in service, but merely to give support to the surface, the working face. If the back surface is backed up by a strong, relatively hard core, a thin case, quickly produced by gas carburizing, cyaniding, etc., or almost instantaneously produced by flame or induction hardening, may do quite as well.

"For suitable backing, the depth of hardening obtained in medium, forging grade, plain carbon steel is often quite adequate. It is clumsy to use low-carbon alloy steels and spend a long time carburizing them when an easily obtainable carbon steel can be processed in a jiffy to give something usually quite as good.

"Let's not forget the carbon steels! Let's reserve the scarce alloying elements for those steels in which each alloying element plays a unique and nonsubstitutable role!"

Metallurgical Terms

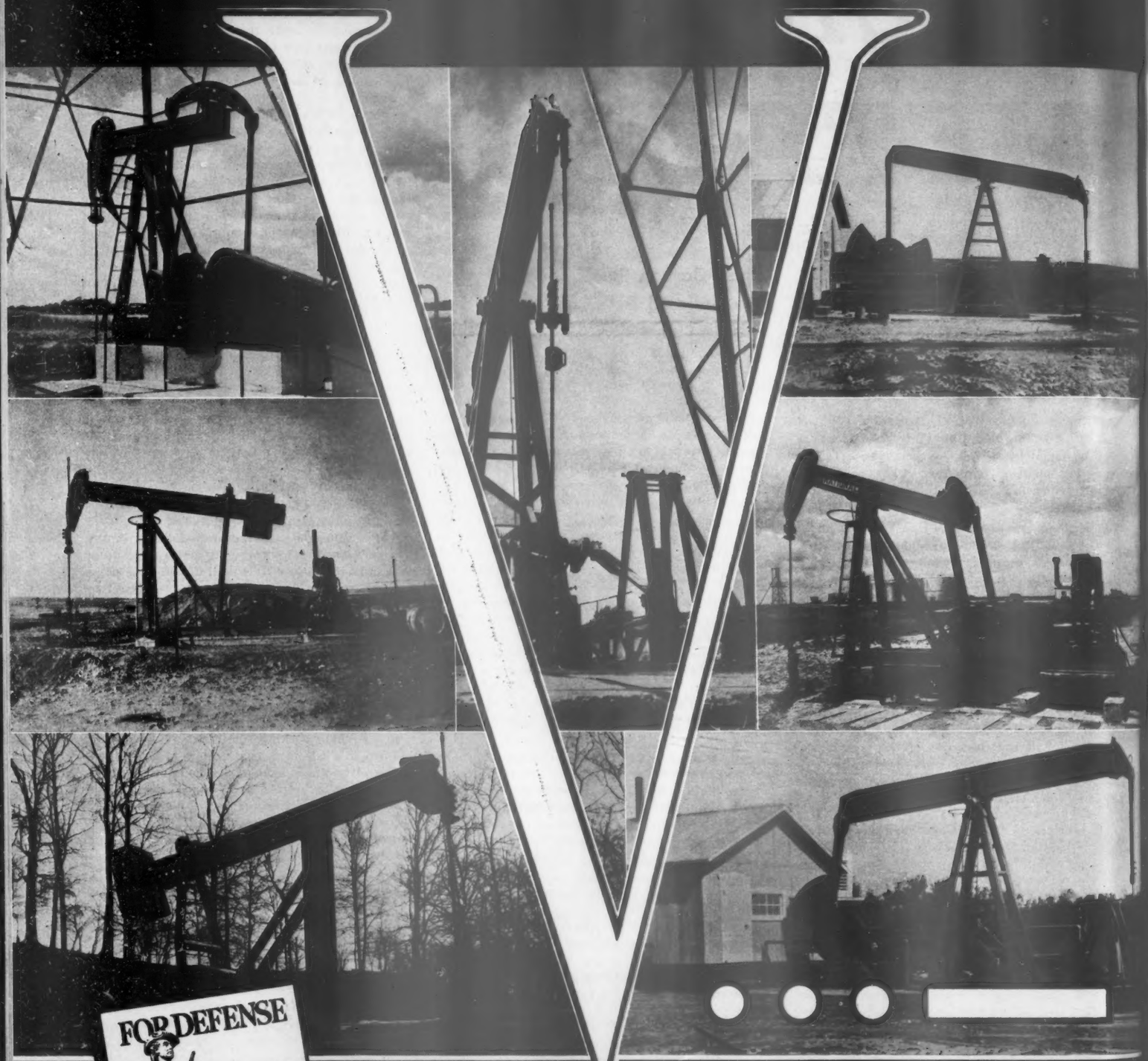
Hydryzing

A CASE-HARDENING process in which the furnace atmosphere is produced by passing air through a hot bed of charcoal. Small amounts of ammonia gas and benzene are added to the gas stream. A completely bright finish can be attained on steel parts by hardening in this atmosphere and by conducting the subsequent quenching operation in the absence of air.

Dry Cyaniding

THIS process is a combination of nitriding and gas carburizing which produces a hard surface of carbides and nitrides which is similar in many properties to the surface produced by the cyaniding process. A mixture of ammonia and various carburizing gases are used at a temperature of 1,350°-1,550° F. The effect of ammonia is to reduce the temperature at which carburization can be conducted.

Vital To Victory . . .



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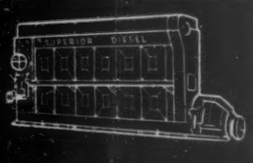

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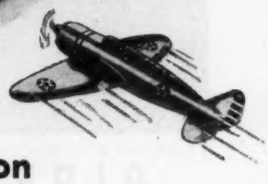

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API Walking Beam Rating, Inches	3200	4300	6725	8900	8900	9125	9125	12750
Peak Torque Rating, Inch lbs. at 20 SPM	6360	11050	24300	48200	48200	57200	57200	76500
Overall Gear Ratio	26.0	29.5	29.2	29.2	29.2	29.8	29.8	29.6
Max. Polished Rod Stroke, Inches	16	20	28	34	34	42	42	48

*Equipped with National Eccentric Cranks and Counterweights—other sizes have beam type Counterweights.

TYPES FOR MEDIUM TO HEAVIEST SERVICE

BRIEF SPECIFICATIONS

Single Reduction Types	TU464-H46TB	TU603-H60T	TU603-H80T	TU803-H80T	TU803-H110T
Double Reduction Types	TU464-HD46TB	TU603-HD60T	TU603-HD80T	TU803-HD80T	
API Walking Beam Rating, lbs.	15000	18850	18750	24000	24000
Single Reduction Type: Peak Torque Rating, Inch lbs. at 20 SPM	124000	170000	230000	230000	303000
Overall Gear Ratio	10.2	9.7	9.4	9.4	9.32
Double Reduction Type: Peak Torque Rating, Inch lbs. at 20 SPM	113000	139000	200000	200000	
Overall Gear Ratio	30.8	26.8	28.3	28.3	
Maximum Polished Rod Stroke, Inches	54	54	64	72	72

All the above types have National Eccentric Cranks and Counterweights.

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Pipe-Line Activity

Phillips Plans for Laying Of Wisconsin Gas Line

Plans for supplying gas to the industrial areas of Wisconsin are proceeding as rapidly as possible, according to an announcement by Phillips Petroleum Co. Wisconsin Gas Transmission Co., a Phillips subsidiary, received from the Wisconsin Public Service Commission a conditional order, compliance with which will authorize the construction of a natural-gas pipe line, approximately 900 miles long, from the Texas Panhandle into southern and eastern Wisconsin.

The pipe line would supply gas to 10 public-utility companies which operate 15 distributing systems in the state. The population of the area to be served is approximately 1,470,000. It is estimated that there would be 317,000 residential customers, 18,000 commercial customers and 1,940 industrial customers.

Over $318,000,000 of defense contracts have been awarded to 229 industrial firms in the area to be served.

Oklahoma Pipe Line Continues With Survey for Tinsley Line

Work of surveying for the 175-mile 10-in. pipe line from the Tinsley field, Mississippi, to Baton Rouge, La., continues in preparation for the laying a crude-oil outlet which will serve as the first direct connection between the field and a refinery. Surveying operations are in the hands of Oklahoma Pipe Line Co., which has charge of this project, that Standard Oil Co. of New Jersey interests wish to build to provide efficient transportation.

Kansas Pipe Lines Are Expanded

New Kansas pipe-line developments will increase the state's oil transportation capacity to around 300,000 bbl. a day, according to Gov. Payne Ratner. The present capacity is 260,000 bbl. daily or the same as the state's January allowable.

The Kaw Pipe Line Co. is laying 17 miles of 12-in. pipe north of Chase in Rice County.

White Eagle Division of Socony-Vacuum Oil Co., Inc., is understood to have been notified that pipe for use in constructing a loop of 23 miles in Rice County, Kansas, will be shipped after the middle of the month. The line will be 10-in. and will loop the present line from Chase to the Wherry station in Rice County, Kansas. It should be in operation, weather permitting, during the latter part of March.

Stanolind Pipe Line Co. is constructing loops on the trunk line from Wyoming to Freeman, Mo., in the section between Washington, Kans., and Freeman, Mo. These loops will raise the total capacity of the trunk line to 55,000 bbl. and provide for moving 10,000 bbl. more than is now handled from western Kansas.

In connection with this program, Stanolind is preparing to install new pumping facilities at Laton station on the lateral between Bemis and Washington, Kans. The new equipment has been delayed and probably will not be installed until February which may mean that the capacity of the line will not be increased until March. The new equipment alone would increase capacity from 22,000 to 28,000 bbl. However, it is anticipated that the construction of an additional station for low-pressure operation will raise the total capacity of the lateral to about 35,000 bbl.

The low-pressure station which is contemplated will be located near Concordia, Kans. It will be equipped with pumping units which are now in service temporarily at Laton; this equipment consists of four 175-hp. engines driving reciprocating pumps.

Shell Lays Line In North Texas

One of the largest pipe-line projects in North Texas is expected to get under way within the next few days by Shell Pipe Line Co., as it begins construction of an extension from its gathering system in southern Oklahoma into the area.

Approval was given by OPM a few days ago and both 4-in. and 6-in. pipe have been moved to Archer City. Still more 4-in. and 8-in. have been moved to Henrietta. Survey of the pipe line was made several months ago before the plan was submitted to OPM.

It is understood that Shell will lay an 8-in. line parallel to its line from Healdton to Ryan, Okla., thence south across the Red River into Clay County, Texas. From there the new artery will extend to the New York City field, 8 miles southeast of Henrietta and to the prolific Antelope pool. Plans also are expected to include extensions to the Scotland field of Archer County, on to the Hull-Silk field where oil will be taken from about 30 producers recently acquired by the company from Petroleum Producers Co. and on to the K.M.A. field to take oil from the company's Riley, Preston and Griffin leases.

Right-of-way has been obtained for the part of the project which will be built soon and pipe is being unloaded at Henrietta.

Length of the new line will be about 74 miles.

Pipe-Line Dynamiters Are Indicted on New Charges

Seven men convicted on a charge of conspiracy in connection with the dynamiting of the Texas Empire Pipe Line near Boody, Ill., in February 1940 will go on trial January 19 on a charge of malicious mischief as the result of a second indictment by a grand jury in Macon County, Illinois.

As a result of stiff sentences imposed at the conclusion of the trial for conspiracy, seven men face the possibility of becoming members of the first chain gang in Illinois history.

The sentences were: Four years eleven months to five years in prison and $2,000 fines—George Diehl, former East St. Louis policeman; George Bruns, Granite City, a former bartender; Stuart C. Lorton, East St. Louis, business agent for the boilermakers' union; and Harry Meisenhelter, chairman of the Decatur Building Trades Council.

One to five years in prison and $1,000 fines—Cecil Wilson and Melvin Watkins, members of the executive board of the Decatur union; and

Four to five years in prison and $1,000 fine—Ed Roy, member of the Decatur Building Trades Union Council.

The sentences were passed after defendants presented motions for new trials and arrest of judgment.

Pearl Hoskinson, Decatur, turned state's evidence and is out on bond awaiting sentence. Directed verdicts of not guilty were returned dur-

Pipe-Line Personalities . . . . J. D. Cummings

J. D. (JIM) CUMMINGS, member of the firm of Crutcher-Rolfs-Cummings, Houston, Tex., is entitled to credit for having an important part in developing equipment which is now widely used in the various steps of pipe-line construction.

His career in pipe lining started when he was a farmer, watching a pipe-line gang in his neighborhood laying pipe by the hand methods employed 2 decades ago. He saw the possibilities of mechanical equipment and since then his inventions have contributed materially to the revolution in pipe-line construction methods.

When Sinclair Pipe Line Co. was laying pipe near Washington, Kans., for the crude-oil line from Wyoming to Freeman, Mo., in 1923, Mr. Cummings was farming 400 acres nearby. He proceeded to develop the first bulldozer. This was used for backfilling an extensive part of the line. The bulldozer was later adopted by the industry for pipe lines and other projects throughout the country. In 1925 he contributed to the development of the side winch which was used in connection with the bulldozer for filling places in the ditch which were beyond the reach of the bulldozer. Later in 1925 he developed side-boom equipment for the Hope Engineering Co. to backfill all of the ditch for the gas line of Moody-Seagraves from Refugio to Houston, Tex. Before the side boom came into pipe lining, there was frequent difficulty in lifting big pipe out of the mud. After the side winch and boom demonstrated their value for this, they were employed in laying pipe and in lowering in. This tractor equipment, developed by Mr. Cummings, was manufactured by W-K-M, Inc., Houston, and used throughout the world. In 1929, Mr. Cummings developed a cradle for handling pipe.

In 1934, he joined the firm of Crutcher-Rolfs-Cummings, with whom he had been closely associated. In the fall of 1938, he developed what is known as the Johns-Manville power-driven coating and wrapping machine which has coated and wrapped in one operation thousands of miles of pipe of all sizes in various parts of the world. He says his hobbies are farming and pipe lining.

ing the trial against George Good, a Springfield hoisting engineer, and Mack Ray, Decatur teamsters' union official.

Under the criminal code it is provided that when defendants fail to pay fines imposed by the court, they may be required to work out the fines at labor on public roads at the rate of $1.50 a day. The statute also states that such prisoners may be chained.

Turner Valley Will Have Larger Outlet

Pipe-line outlets for the Turner Valley oil field of Canada are being enlarged to carry between 45,000 and 50,000 bbl. of crude oil daily instead of the present maximum of 28,000 bbl. daily, according to reports from Canada.

The expansion of pipe-line capacity has been made possible by the extension of the Turner Valley oil field northward, thus increasing substantially the estimated oil reserves of the field. New wells completed in the northern extension area are said to have been mostly of larger initial capacity than those in the older areas.

Turner Valley has provided most of Canada's oil output to date. In view of increasing Canadian oil requirements due to the war and the large quantities of crude which have to be imported into Canada from the United States the new Turner Valley developments are considered of major importance.

Canadian oil output has been limited to a rate of about 8,500,000 bbl. annually by existing pipe-line facilities. Annual consumption exceeds 50,000,000 bbl. Proposals a year or so ago to construct a large trunk pipe line connecting the Turner Valley district with some Lake Superior port were vetoed because of the limited reserves available at Turner Valley. This project has not been revived despite the expansion of the oil field's potentialities. The new pipe line, like the existing line, will go to Calgary, less than 50 miles distant, where several oil refineries are situated.

Hospah Dome, N. M., Outlet Is Completed

The Petroleum Products Corp., which is carrying on a drilling campaign on the Hospah dome, McKinley County, New Mexico, has completed and put into operation its 32-mile 4-in. pipe line from the field to Prewitt, on the Santa Fe Railroad, where it operates a refinery that runs on Hospah crude.

Tapco Scheme Will Not Serve Nation's Needs

Since the proposal to build a pipe line from Wichita Falls, Tex., to Savannah, Ga., will not serve national needs there is no possibility that it will be constructed during the present war period. Consideration of this proposal by the federal Government has been urged by an organization under the name of Trans-American Pipeline Corp., known as Tapco. Promoters of the project have been endeavoring to arrange for federal financing of this proposed 1,050-mile line of 10 and 12-in. pipe which has been estimated to cost between $20,000,000 and $25,000,000.

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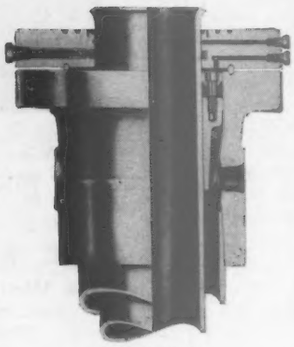

FIGURE 1
Flange for testing resilient seal between casing strings.

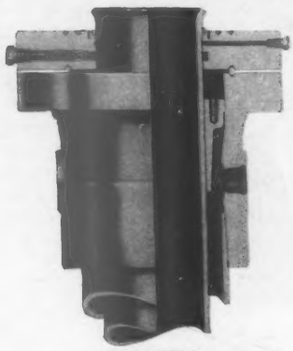

FIGURE 2
Flange for testing welded seal between casing strings.

TWO FOOL-PROOF METHODS TO PREVENT CASING PRESSURE EQUALIZATION . . . . *Both of 'em Cameron!*

Because of the danger of pressure equalization, most safety-conscious operators no longer take for granted the seal between casing strings. Their seeing-is-believing attitude concerning casing seals has no doubt prevented many costly blowouts and re-working operations.

Cameron Casing Heads and Testing Flanges have made casing seal testing extremely practical and certain. Study the cross-section drawings presented above and note the simplified yet unique design of the Cameron Testing Flanges. In order to permit the application of hydraulic test pressure to the primary casing seal, Cameron Testing Flanges employ a moulded asbestos seal ring recessed in the bore of the flange. When plastic packing (shredded asbestos and graphite) is introduced through a port in the flange, it flows around the outside of this moulded asbestos seal ring and forces it into sealing engagement with the pipe. **Thus, the testing or secondary seal may be tightened at will by simply injecting more plastic packing and without disturbing any part of the casing head hook-up for this operation.**

Figure 1 illustrates the Cameron slip suspension type of casing head with neoprene-asbestos seal of the space between casing strings and type "WM" testing flange. This assembly is used extensively in high pressure areas where the use of Grade N-80 casing makes field welding impractical. The neoprene-asbestos packing is expanded by tightening socket head cap screws which provide higher compression on the packing than conventional screwed type packing glands.

Figure 2 illustrates the Cameron slip suspension type casing head with welded seal of the space between casing strings and type "M" testing flange.

Complete details on all types of Cameron Casing Heads are carried in your Composite Catalog, or descriptive literature will gladly be sent to interested operators on request.

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The anticipated decline in drilling activity following the issuance of M-68 has not yet materialized as completions reported last week numbered 571, an increase of 17 over the previous week. Oil wells were up 31, dry holes increased by 7 and gas wells were down 21. The chief effects of M-68 are in a considerable decline in new locations, particularly in developing fields in which the present spacing pattern is less than 40 acres to the well.

Requests for exemptions are reported to be increasing, particularly in the Mid-Continent area where 40-acre spacing is exceptional. Although there is still some talk of 5,000,000 bbl. daily production during the current year, the enforced reduction in the use of gasoline by reason of tire restrictions is causing many operators to wonder whether this goal still remains. Much depends on increased requirements from abroad, especially if the fields of the Netherlands East Indies are destroyed or are taken over. The petroleum coordinator has not retreated from his stand that more drilling is necessary if military and civilian demands are to be met so that until the amount and nature of the demand are known operators will probably have to mark time.

Exploration has been greatly hampered in the past by geological theories which often prevail in advance of actual drilling. This is in part due to pressure on the geologist to find oil with the minimum number of failures. Any geological considerations which add to the number of possible reasons for not finding oil in a new area tend to be seized and efforts are diverted into known areas where structures can still be drilled with less risk.

The small production obtained from Illinois basin fields during the early part of the century discouraged operators from seeking the rich stores which flooded the markets during the past 4 years. At an earlier date, the presence of red beds and of salt prevented operators from seeking the rich pays now known in the Panhandle and West Texas. For some reason it was believed that nothing would be found north of Coalinga in the San Joaquin Valley. In other areas, prospecting has been delayed because the carbon ratios of coal were too high and high carbon ratios appeared to limit production in the Appalachian area.

Today, there are probably fewer of these mental limitations to exploring new fields, but they still remain. One is the belief that regional limits can be placed on the porosity of limestone pays. This porosity may be developed in so many ways that it is difficult to justify the belief that a known limestone pay cannot produce on structure unless a well is drilled to find out. Barnsdall's recent discovery in Arkansas is excellent reason for discarding long-range predictions as to the porosity of limestone formations. This is just as true of the porosity developed in an oolitic lime as that which is formed as a result of leaching below an unconformity.

ARKANSAS: Barnsdall's Smackover lime discovery north of what was formerly believed to be the northern limit of production from that formation is showing as the best discovery in recent years in the southwestern part of the state. Applications have been filed for 12 wells, ranging up to 3 miles from the discovery (p. 82).

SOUTHWEST TEXAS: Southern Minerals' deep test in the Alice field attempted to blow out from a deep sand, believed to be lower Yegua. Gas-distillate is showing in the Carrizo-Wilcox south of Caesar and Stratton is again extended nearly ½ mile south. A shallow pumper has opened a new field northeast of Bruni, Duval County (p. 80).

OKLAHOMA: The first well drilled at Apache has been deepened to penetrate 198 ft. of Wilcox sand and has increased its production five-fold. The Arbuckle has been found dry in the Cumberland pool (p. 78).

TEXAS GULF COAST: A new Marginulina-Frio pool between Ganado and Mauritz in Jackson County and a basal Frio gas-distillate pool have been opened. The Wilcox sand is showing in two wildcats in Tyler and San Jacinto counties (p. 70).

LOUISIANA GULF COAST: Four good sands have been logged below the regular pay in the West Bay field. A new sand has been found on the southwest flank of the Port Barre dome (p. 81).

MICHIGAN: A new gas area has been opened up in the southern part of the peninsula, southwest of the city of Jackson. The field is 75 miles from the nearest gas field (p. 84).

WEST TEXAS: Oil showings are reported in the Clear Fork in a wildcat northwest of Shafter Lake in Andrews County (p. 79).

MISSISSIPPI: The north end of the Tinsley field has been defined by a dry hole (p. 84).

CALIFORNIA: Partial shutdown due to disruption of transportation in the coastal district is being offset to some extent by increased activity in the San Joaquin Valley (p. 72).

ILLINOIS: McClosky production has been picked up about midway between the Maunie and North Maunie pools (p. 69).

INDIANA: Mansfield production has been found ½ mile north of the Mount Vernon field which produces from the Waltersburg and Cypress (p. 74).

NORTH LOUISIANA: Union Producing Co.'s deep test in the Lisbon area blew out in either the basal Buckner or the Smackover lime. The well was quickly brought under control (p. 82).

KANSAS: Two wildcats are started in the northwest part of the Anadarko basin, known in Kansas as the Dodge City basin (p. 71).

WEST CENTRAL TEXAS: Shackelford County's lower Strawn discovery is rated as a 300-bbl. well (p. 75).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended January 10, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	Ttl. comp. to date 1941
N. Y., Pa., and W. Va.	92	11	8	111	221,936	219	173
Ohio	8	13	13	34	69,592	59	41
Indiana	9	3	3	15	24,062	36	10
Kentucky	3	2	1	6	10,832	30	15
Illinois	56	1	17	74	189,428	137	112
Michigan	9	3	9	21	43,147	41	28
Kansas	25	1	11	37	117,736	76	50
Nebraska	0	0	0	0	0	0	6
Missouri, Iowa	0	0	0	0	0	0	0
Oklahoma	20	1	9	30	100,214	51	57
Texas:							
North Central Texas	15	0	7	22	177,524	74	94
West Texas	53	1	6	60	251,149	81	66
Texas Panhandle	14	1	0	15	45,436	32	14
East Texas	14	0	4	18	87,824	27	41
Texas Gulf Coast	22	0	5	27	158,975	44	30
Southwest Texas	19	4	7	30	146,824	59	40
Total Texas	137	6	29	172	867,732	327	285
North Louisiana	8	0	11	19	64,919	37	20
Louisiana Gulf Coast	13	0	9	22	156,636	46	26
Total Louisiana	21	0	20	41	221,555	83	46
Arkansas	1	1	0	2	11,511	4	7
Mississippi and Southeast	1	0	2	3	11,232	14	6
Montana	1	0	0	1	1,562	6	7
Wyoming	1	0	0	1	3,230	3	8
Colorado	0	0	0	0	0	0	0
New Mexico	4	0	0	4	9,145	8	13
California	16	2	1	19	75,985	31	43
Total United States	404	44	123	571	1,756,963	1,125	918
Total previous week	373	65	116	554			
Week ended Jan. 11, 1941	335	34	93	462			

Service on Active Fields

OLLA AND SOUTH OLLA FIELDS, LOUISIANA

Compiled by The Oil and Gas Journal

Geographic Location

Northwestern La Salle Parish in Central Louisiana, about 110 miles southwest of Shreveport and 125 miles northwest of Baton Rouge.

Terrain

Low, marshy area, heavily timbered, except the parts which have already been cut over.

Supply Stores and Hauling Facilities

Tullos, Jena, Olla, Urania, Georgetown and other small towns which served the old Georgetown-Urania field during its development in 1926 and 1927.

Water Supply and Fuel

Water from wells drilled throughout the field. Fuel used is gas from wells completed in the regular oil-producing horizon.

EARLY DEVELOPMENT

Discovery Well

Placid Oil 9 Louisiana Central Lumber Co., SE NE NE 13-10n-2e, initial production 288 bbl. daily from the Wilcox sand zone from 2,270-76 ft. in March 1940. By the end of that year there were some 98 wells in the field development. Nearby wildcatting and extension activity led to the opening of the South Olla area in March 1941 by Placid Oil 1 Tremont, NW SE 23-9n-2e, initial production 72 bbl. daily from the Wilcox sand zone from 2,528.34 ft. There were several gas wells drilled previously in this area south of the main field; however, this was the first oil producer.

Subsequent Development

During 1941 some 92 oil wells were drilled in the Olla field proper and 10 in the South Olla area. Several thousand new productive acres were added to the fields by this drilling and it is as yet an undefined area, except at certain obscure points. Probably Olla and South Olla will prove to be a single field; and there is a possibility that Little Creek, just southwest of the South Olla area, will also be joined into the continuous-producing area.

OWNERSHIP OF PRODUCING WELLS

	No. wells
Olla proper:	
H. L. Hunt and Placid Oil Co.	136
Arkansas Fuel Oil Co.	51
Carter Oil Co.	2
Danica Oil Co.	1
South Olla:	
Placid Oil Co.	10
Total Olla and South Olla	200

GEOLOGY

Method of Discovery

Widespread wildcatting following the discovery of Urania in 1926 provided sufficient subsurface control in the area to outline a favorable structure east and northeast of the old Urania field. After checking with reflection seismograph, the subsequent drilling led to the discovery well in March of 1940.

Type of Structure

Elongated, narrow anticlinal ridge of small closure along the east side of the Urania uplift. Superimposed along this ridge are one larger and three smaller local closures. However, the structural pattern is still incomplete. The field was the first in the area and the first to produce in large quantities from sands below the top of the Eocene Wilcox group.

Producing Sands

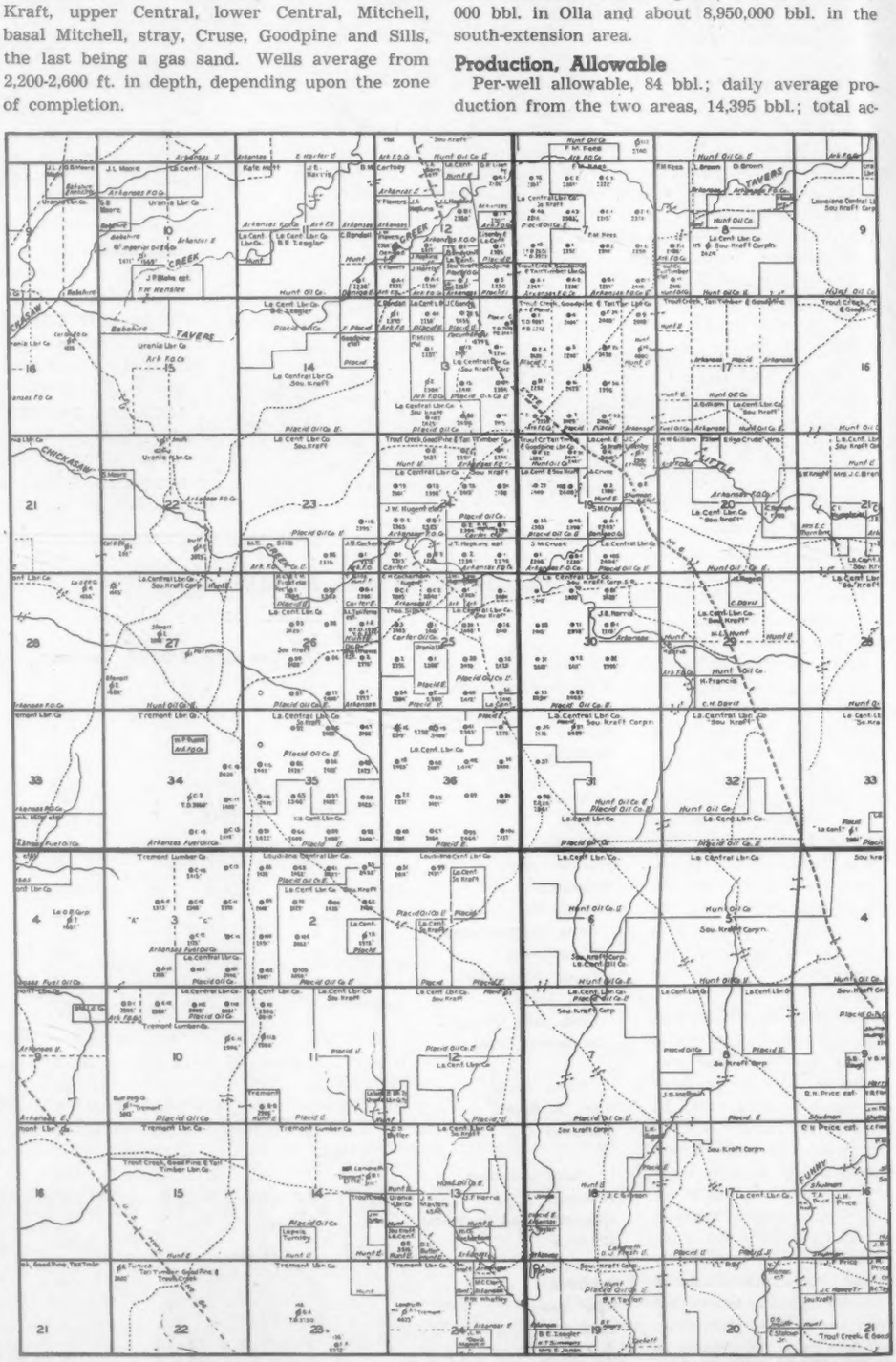
Early production was from the top sand member of the Wilcox. At least nine producing sands have been opened since. Their continuity has not yet been determined throughout the field, but most have been named. They are the Tremont, Kraft, upper Central, lower Central, Mitchell, basal Mitchell, stray, Cruse, Goodpine and Sills, the last being a gas sand. Wells average from 2,200-2,600 ft. in depth, depending upon the zone of completion.

Spacing Pattern, Proven Acreage, Reserves

Forty-acre spacing. Proven acreage, about 8,800 acres for Olla and 1,800 acres for the extension area. Estimated remaining reserve, about 38,775,000 bbl. in Olla and about 8,950,000 bbl. in the south-extension area.

Production, Allowable

Per-well allowable, 84 bbl.; daily average production from the two areas, 14,395 bbl.; total ac-



Globe Map Co., Shreveport

Map of the Olla field, and South Olla area, La Salle Parish, Central Louisiana. The main portion of the field shown is the Olla field proper, while the few scattered wells at the extreme bottom of the map constitute the South Olla or Olla South Extension area as it is now known. A few of the South Olla area wells which are too far south to be shown on this map are as near the north end of the Little Creek field as to Olla

cumulative production on January 1, 1942, 5,727,985 bbl.

DRILLING AND COMPLETION

Types of Rigs Used

All drilling done with light, entirely unitized, diesel rotary rigs.

Drilling Time

Time required to spud in, set surface casing, rig up and drill to the total depth and cement the oil string is about 5 days. The total time required to complete a well varies from 10 to 18 days, dependent upon the difficulty encountered with squeezing and perforating the productive zone.

Casing and Hole Size

A 200-ft. conductor string of 10¾-in. is set with 125 sacks of cement. Then, through the pay zone, the 7-in. o.d. oil string is set to a depth of from 2,200 to 2,600 ft. with 350 to 400 sacks.

Cementing

After landing the oil string, the hole is circulated and the pipe worked for about an hour, then the cement is run. The first 100 sacks are mixed thin (about 12 lb.) and used to wash the sand face, while the remaining 250 to 300 sacks are thickened up to 15 lb. per gallon. The cement is allowed to set for 48 hours, then the perforating and squeezing procedure begins.

Number of Bits

Average of three bits. These are of the three-way, drag type.

Drilling Conditions

Due to the soft nature of the ground, some consideration is given to derrick foundations and pilings. The drilling itself is without serious problems since it is mainly relatively soft limes and shales that are encountered.

Mud Weights

The hole is drilled with approximately 10.2-lb. mud.

COMPLETION PROBLEMS

Cementing

Producing sands are mainly lenticular, thin and have indefinite continuity throughout. The gas-oil and the oil-water contact zones are indistinct. The soft well walls prevent a good cement bond, thus practically no field well is entirely free of some gas or water.

Tubing

All wells are equipped with tubing and packers and either flow or pump through tubing with conventional christmas tree hookups.

PRODUCING PRACTICES

Tank Batteries

From three to five wells produce into a common tank battery. The wells of the unit are flowed into a gas separator, thence through heaters and salt-water settling tanks, and into the stock tanks.

Pumping Units and Artificial Lift

All wells unable to flow are equipped with either a small pumping unit driven by a 15-hp., one-cylinder, gas engine, or are equipped with automatic time-regulated gas lifts. Adequate gas is available in the field for both pumping and gas-lift fuel.

Salt-Water Problems

Practically all field wells make some percentage of salt water. This is, in some cases, emptied into the many streams and creeks in the area, and in other cases is evaporated in large earthen pits equipped with waste separator gas flaring over the salt pits.

Pipe-Line Outlet

H. L. Hunt owns the field gathering system and the oil passes from this system into the Standard Oil Co.'s Alexandria line at a point about 8 miles south of the field. From this it empties into the Standard's trunk carrier from South Arkansas and North Louisiana.

Crude-Oil Analysis

Olla field crude-oil assay, from Hunt and Arkansas Fuel Oil Co. 1 Goodpine; oil from the lower Central horizon from 2,267 ft.:

TESTS ON CRUDE

Gravity	31.3
Flash	95
Fire	120
Viscosity at 50° F.	596
Viscosity at 100° F.	78
Pour point	40
B.s. and w.	30
Sulfur, per cent	0.15
Color	Black green
Distillation of 2 l., atmospheric pressure, water-free oil	overpoint 120

SUMMARY

	Gasoline	Kerosene	Residue
Per cent	12.5	11.5	75.0
Vapor temp.	373	496	...
Gravity	50.8	38.0	27.3
Flash	...	tag. 140	320
Fire	...	...	360
S.U. vis. at 100	...	...	240
P.T.	...	...	50
Color	30	25	blk. gr.
Loss, 10 per cent.			

Est. topping and cracking, per cent:

Straightrun gasoline	12.5
Kerosene	11.5
Cracked gasoline	37.0
Fuel oil (11 gravity)	34.0
Gas and loss	5.0

A.S.T.M. distillation on gasoline cut:

Gravity	50.8
I.B.P.	177
10 per cent	222
20 per cent	242
30 per cent	252
40 per cent	263
50 per cent	282
60 per cent	294
70 per cent	308
80 per cent	326
90 per cent	347
95 per cent	367
E.P.	400
Recovery	98
Doctor	neg.
Octane No.	68 MM
C.c. lead to equal 70	74 = .6
Corrosion	neg.
Per cent at 221° F.	9.5
Per cent at 284° F.	51
Per cent at 392° F.	97

ACTUAL CASE HISTORY

THIS PIPE WIPER STRIPPED 4,000,000 FEET OF HOLE

How durable is a Patterson-Ballagh Pipe Wiper? Well, here's an example.

The 17" Pipe Wiper shown in the photo has been used for 1½ years in constant service.
Seven wells were drilled with it.
About 500 trips were made with an average depth of 8000 feet.
The total depth footage ranged from 50,000 to 60,000 feet.
The total pipe pulled through the Wiper equals more than 4,000,000 feet of travel.
The Wiper was still in service when the photo was taken.
This is an unusual service record, indicative of the long life Patterson-Ballagh Pipe Wipers are capable of rendering. Install one on every one of your rigs. It'll soon pay for itself. See Composite Catalog.

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PATTERSON-BALLAGH PIPE WIPER

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REED ROLLER BIT COMPANY

REED ROTARY DRILLING TOOLS

P. O. BOX 2119 HOUSTON, TEXAS

State Resumes Issuing Permits But Drilling Lags; Pool Opened

By STAFF CORRESPONDENT

MATTOON, Ill.—White County, which maintained its place as the most active county in Illinois during the greater part of 1941, is the location of the first new oil pool opened in the state this year. The pool opener was Joe Dawson 1 Clark estate, NW SW NE 36-5s-10e, in the eastern edge of the county north of Maunie and near the Wabash River. The well came in flowing at the rate of 100 bbl. of oil and 15 to 20 bbl. of water daily from the McClosky lime. It is approximately midway between the Maunie and North Maunie pools.

Meanwhile, testing was under way at a Richland County wildcat, Benedum-Trees 1 Powell, E½ NW SE 10-3n-10e, ½ mile south of Olney, following casing perforations opposite the McClosky at 3,145-47 ft. In a previous test water broke in and the section was squeezed off in an attempt to eliminate the water. Another wildcat, ½ mile southwest of Olney, Olson 1 Boyd, W½ SW SW 10-3n-10e, was abandoned at a total depth of 3,345 ft. The test ran higher structurally than 1 Powell but failed to find a break in the McClosky.

Drilling Permits Issued Again

In addition to the two important wildcat tests, Illinois oil activity last week was marked by a further decline in active operations as producers awaited clarification of OPM regulations governing drilling operations. Operations were also reduced by subzero weather.

However, one development insuring some new exploration was an announcement by Robert W. Medill of the state Department of Mines and Minerals that the issuance of drilling permits had been resumed after a week's suspension. The permits are being issued to operators whose locations for new wells conform to federal regulations. The operator desiring a permit must also file to the department's Oil and Gas Conservation Division a plat showing wells and lease holdings within a mile of the proposed location.

Wildcat East of Salem

Scheduled for early drilling in Marion County is National Petroleum 1 Lindley, E½ NE SW 22-2n-4e. This test is in Iuka Township, 2 miles south and 10 miles east of the Salem pool and is highly regarded by many operators.

ILLINOIS COMPLETIONS

Wildcats

Clay County: J. H. Jones 1 Neely, NE NW NE 11-3n-7e, dry at 1,530 ft.

Clinton County: Newton & Ward 1 J. E. Schaefer, NE NE SE 13-3n-3w, dry at 1,143 ft., Glen Dean 800 ft., Barlow 1,015 ft., Benoist 1,133 ft.

Hamilton County: Dave Ring 1 Craddock, NE SE NW 22-6n-5e, pumped 180 bbl. oil and 14 bbl. water 320-qt. shot on bottom, Aux Vases 3,188-3,225 ft., pay 3,218-11 ft., T.D. 3,225 ft.

Iroquois County: Robinson-Puckett, Inc., 1 Behrens, SW NW NE 7-25n-13w, dry at 935 ft., Devonian 289 ft., Silurian 313 ft.

Jasper County: J. Carroll and M. L. Smith 1 E. Miller, S½ NW SW 32-7n-10e, location abandoned.

St. Clair County: Gus Kunze 1 C. W. Young, NW NE SW 29-3s-6w, dry at 630 ft., Cypress sand 503 ft., Benoist 604 ft.

Wayne County: Texas 2 B. Talbert, S½ SW SE 17-1s-6e, swabbed 303 bbl., 3,000 gal. acid, McClosky 3,183-86 ft., T.D. 3,209 ft.

Fields

Allendale, Wabash County: S. W. Petrie 1 Trimble estate, W½ SW SE SE 35-2n-12w, pumped 65 bbl., Benoist 1,974 ft., T.D. 1,990 ft.

Benton, Franklin County: H. H. Wegener 1 McKemie, NW NE SW 30-6s-3e, dry at 2,916 ft., Waltersburg 2,049 ft., Glen Dean 2,230 ft., Benoist 2,700 ft., Aux Vases 2,775 ft.

Clay City, Clay County: J. V. Dunbar 1 A. C. Gill, NW SW SE 13-2n-7e, pumped 49 bbl., McClosky 3,025-28 ft., 3,030-36 ft., T.D. 3,040 ft.

Clay City, Wayne County: Pure 1 C. M. Beckel, E½ SW NE 11-1n-7e, pumped 324 bbl., Aux Vases 2,947 ft., McClosky 3,067-70 ft., T.D. 3,075 ft.

Dale, Hamilton County: Shell 8 W. W. Daly, SW SE NE 12-6s-6e, pumped 61 bbl. oil and 5 bbl. water, Aux Vases, T.D. 3,178 ft., P.B. 2,949 ft.

McBride, Inc., 2 Mayberry, SE SE SE 12-6s-6e, pumped 303 bbl., Aux Vases 3,043 ft., T.D. 3,092 ft.

Dundas, Jasper County: Texas and Gulf 1-OA Hines Comm., N½ NW NW 9-5n-10e, swabbed 81 bbl., McClosky 2,742-46 ft., 2,760-64 ft., 2,768-72 ft., T.D. 2,815 ft.

Pure 1 A. Stanley, SW SE NE 18-5n-10e, flowed 188 bbl., McClosky 2,827-31 ft., 2,833-35 ft., 2,840-42 ft., T.D. 2,863 ft.

Dupo, St. Clair County: B. J. Smith 3 Shoudy, N½ SW NW 34-1n-10w, pumped 10 bbl. oil and 30 bbl. water, Trenton 550 ft., T.D. 608 ft.

Tarelton Oil 8 fee, SE SW SE 28-1n-10w, pumped 60 bbl. oil and 100 bbl. water, Trenton 649 ft., T.D. 714 ft.

Lee & Lovens 2 Netten, NW NW SE 28-1n-10w, pumped 50 bbl. oil and 50 bbl. water, Trenton 502 ft., T.D. 564 ft.

East Centerville, White County: Sun 1-B C. Brown, N½ SE SE 12-4s-9e, dry at 3,260 ft., Glen Dean 2,617 ft., Cypress 2,900 ft., Paint Creek 3,016 ft., McClosky 3,256 ft.

Fairfield, White County: Ohio Fuel Supply 1 Shaw Hill, N½ SE NE 2-2s-7e, pumped 418 bbl., Levias 3,238-44 ft., McClosky 3,286-88 ft., 3,298-3,304 ft.

Watkins & Weinert 2 B. C. Wright, S½ NE NE 2-2s-7e, pumped 196 bbl., McClosky 3,301-09 ft., T.D. 3,314 ft.

Griffin, Wabash County: W. W. Gray 20-A fee, NE NW NW 14-3s-14w, pumped 102 bbl., Cypress sand 2,530-45 ft., T.D. 2,545 ft.

Inman East, Gallatin County: Buell-Herndon 8 Egyptian Tie & Timber, SE SW SE 16-8s-10e, pumped 40 bbl., Cypress sand 2,415 ft., T.D. 2,430 ft.

Johnsonville, Wayne County: Olson Drlg. 3 Weaver, SE NE SW NW 1-1s-6e, dry at 3,295 ft., Aux Vases sand 3,071 ft., McClosky 3,244 ft.

Wiser 4 H. States, W½ SE SW 36-1n-6e, pumped 15 bbl., Aux Vases, old well P.B. from 3,330-28 ft.

United Prod. 2 George Watson, S½ SW NE 35-1n-6e, pumped 20 bbl. oil and 51 bbl. water, McClosky 2,175-77 ft., 3,184-87 ft., 3,205-08 ft., T.D. 3,225 ft.

Wiser Oil 7-B Dickey, E½ SE SW 34-1n-6e, pumped 230 bbl., Aux Vases sand 3,014 ft., T.D. 3,034 ft.

Texas 1 H. Haught, N½ NW NE 28-1n-6e, swabbed 125 bbl., McClosky 3,184-88 ft., T.D. 3,220 ft.

Louden, Fayette County: Carter 4 R. Doty, NE SE SE 1-8n-3e, swabbed 36 bbl. oil and 3 bbl. water, Cypress sand 1,513 ft., T.D. 1,520 ft.

Mill Shoals, White County: Texas 18 A. J. Poorman, NE NE NW 30-3s-8e, swabbed 30 bbl. oil and 4 bbl. water, Aux Vases 3,196 ft., T.D. 3,235 ft.

Texas 17 A. J. Poorman, NW SE NW 30-3s-8e, swabbed 16 bbl. oil and 2 bbl. water, Aux Vases 3,200-02 ft., T.D. 3,228 ft.

Arrow Drlg. 2 M. McIntosh, NW NW SW 30-3s-8e, dry at 3,415 ft., Glen Dean 2,590 ft., Cypress sand 2,940 ft., Benoist 3,118 ft., Aux Vases 3,208 ft.

Arrow Drlg. 1 McIntosh, NE NW SW 30-3s-8e, pumped 160 bbl., Aux Vases sand 3,205 ft., T.D. 3,229 ft.

H. G. Spiller et al 3 H. Gray, SW SW NW 19-3s-8e, dry at 3,390 ft., Glen Dean 2,670 ft., Aux Vases 3,236 ft., McClosky 3,374 ft.

Pure 3-A W. B. Fox, NE SW NW 19-3s-8e, pumped 62 bbl., Aux Vases 3,230 ft., T.D. 3,254 ft.

Mount Carmel, Wabash County: Dean & Morton 3 Hein, NW SW NE 21-1s-12w, pumped 200 bbl., Biehl 1,459-84 ft., T.D. 1,994 ft., P.B. 1,511 ft.

Hayes Drlg. 4 Cotner, NE NW NW 21-1s-12w, pumped 175 bbl., Cypress sand 1,895-2,000 ft., T.D. 2,000 ft.

New Harmony, White County: First Nat. Pet. Trust 8 Bump, SW NW NW 33-3s-14w, pumped 75 bbl., McClosky 2,960-69 ft., T.D. 2,996 ft., P.B. 2,973 ft.

Haynes et al 1-H Hon, NE SW NE 9-4s-14w, dry at 2,961 ft., Tar Springs 2,220 ft., Glen Dean 2,336 ft., Benoist 2,720 ft., Aux Vases 2,835 ft.

German 5 Hon, SW NW SE 9-4s-14w, pumped 6 bbl., Aux Vases 2,834 ft., T.D. 2,858 ft.

Superior 35 H. C. Ford et al, SE NE SW 4-5s-14w, pumped 40 bbl., Aux Vases 2,846-72 ft., T.D. 2,878 ft.

Superior 33 H. C. Ford et al, NW SE SW 4-5s-14w, pumped 200 bbl., Aux Vases 2,840-66 ft., T.D. 2,874 ft.

Superior 23 H. C. Ford et al, SE NW SW 4-5s-14w, flowed 200 bbl., Aux Vases 2,843-71 ft., T.D. 2,885 ft.

Sun 41 I. R. Greathouse ,SW SW NW 4-5s-14w, pumped 25 bbl. oil and 35 bbl. water, Waltersburg 2,194 ft., T.D. 2,206 ft.

Noble, Richland County: Pure 21 J. O. Coen, W½ NW 9-3n-9e, pumped 116 bbl., Cypress sand 2,591 ft., T.D. 2,594 ft.

Parkersburg, Edwards County: Central P. L. et al 3 Kent Comm., W½ NE SE 31-2n-14w, flowed 1,285 bbl., McClosky 3,122-35 ft., T.D. 3,135 ft.

A. F. Dye 2 E. C. Kent, NE NW SW 32-2n-14w, dry at 3,135 ft., Glen Dean 2,544 ft., Hardinsburg 3,506 ft., McClosky 3,115 ft.

Patton, Wabash County: Richard Young et al 2 Schaffer, NE SE SE 28-1n-12w, pumped 15 bbl. oil and 15 bbl. water, Aux Vases 1,661 ft., T.D. 1,666 ft.

Rising Sun, White County: Skelly 6-A F. Karch, NW NE NW 24-6s-10e, dry at 2,888 ft., Palestine 2,021 ft., Tar Springs 3,205 ft., Glen Dean 2,306 ft., Cypress sand 2,576 ft., Paint Creek 2,692 ft., Benoist 2,717 ft., Aux Vases 2,852 ft., Ste. Genevieve 2,885 ft.

Magnolia 10 Sisson-Higgins, NE NE SE 24-6s-10e, pumped 35 bbl., Palestine 2,071-87 ft., Tar Springs 2,251 ft., T.D. 2,270 ft.

Roland, White County: Cities Service 6 Mount, SW NW NW 12-7s-8e, pumped 165 bbl., Benoist sand 2,734-50 ft., T.D. 2,768 ft.

Sinclair 3 C. D. Reddy, SW SE SE 2-7s-8e, pumped 191 bbl., Benoist 2,766-70 ft., T.D. 2,796 ft.

Rural Hill, Hamilton County: Kingwood 1 Johnson, NE SE NE 14-6s-5e, flowed 159 bbl., pay 3,256-67 ft., old well deepened from 3,198-3,268 ft.

Kingwood 1 Waring, NE NW NE 14-6s-6e, swabbed and flowed 408 bbl. oil and 10 bbl. water, Aux Vases 3,101-16 ft., old well, P.B. 3,358-3,116 ft.

M. E. Roberts 1 L. Lockwood, SE SE NE NW 24-6s-5e, dry at 1,840 ft.

Shell 2 Flannigan, SW SW NE 14-6s-5e, pumped 189 bbl. oil and 30 bbl. water, Levias 3,154-56 ft., 3,197-3,214 ft., 3,275-89 ft., Aux Vases 3,120-52 ft., T.D. 3,320 ft.

Texas 8 T. Lockwood, SW SW SE 13-6s-5e, flowed 566 bbl. in 10 hr., Aux Vases sand 3,104-22 ft., Levias 3,170-96 ft., McClosky 3,256-97 ft., T.D. 3,350 ft.

Texas 8 M. Lockwood, SE SE SW 13-6s-5e, flowed 978 bbl. in 21 hr., Aux Vases sand 3,138-55 ft., Levias 3,188-3,212 ft., McClosky 3,329-37 ft., T.D. 3,375 ft.

Shell 2 C. A. Smith, SW NE NE 13-6s-5e, flowed 900 bbl. oil and 3 bbl. water, Aux Vases 3,116-56 ft., Levias 3,162-66 ft., 3,183-87 ft., 3,202-15 ft., McClosky 3,307-11 ft., 3,329-36 ft., T.D. 3,356 ft.

Shell 5 Ventrees, NW SE SW 12-6s-5e, flowed 149 bbl. oil and 10 bbl. water, Levias 3,148-51 ft., 3,204-18 ft., McClosky 3,334-40 ft., T.D. 3,377 ft.

Russellville, Lawrence County: First Nat. Bank & Trust 3 G. Lawless, SW NW SW 18-4n-10w, 1,900,000 cu. ft. gas, sand 792-94 ft., 798-906 ft., T.D. 806 ft.

St. Francesville East, Lawrence County: Sinclair et al 4 Allstates, S½ SW SW NE 22-2n-11w, pumped 62 bbl., Benoist 1,745 ft., T.D. 1,772 ft.

Ste. Marie, Jasper County: Lain O. & G. 1 Valbert, NE NE NE 6-5n-14w, dry at 2,890 ft., Glen Dean 2,305 ft., Barlow 2,511 ft., Ste. Genevieve 2,764 ft., Fredonia 2,801 ft., McClosky 2,839 ft.

St. Paul, Fayette County: H. Luttrell 1-B Aukamp, SW SW SE 30-5n-3e, pumped 80 bbl. oil and 32 bbl. water, Benoist 1,898-1,909 ft., T.D. 1,909 ft.

Salem, Marion County: Texas 13 W. Stroupe, NE SE NW 31-2n-2e, flowed 240 bbl. in 11 hr., Trenton 4,482 ft., pay 4,536-45 ft., 4,555-65 ft., 4,585-94 ft., old well deepened from 3,375-4,600 ft.

Simms, Wayne County: Bell Bros. 5 F. Fuhrer, W½ SW SW 28-1s-6e, pumped 26 bbl., Aux Vases 3,004 ft., T.D. 3,185 ft., P.B. 3,023 ft.

Walpole, Hamilton County: Texas 2 F. Shavitz, W½ SE NE 27-6s-6e, pumped 317 bbl., Aux Vases 3,068 ft., T.D. 3,100 ft.

West Centralia, Clinton County: J. J. Broaddus 1 Gary heirs, SW NW SW 14-1n-1w, pumped 100 bbl. oil and 2 bbl. water, Cypress sand 1,420 ft., T.D. 1,445 ft.

West Clay City, Clay County: Pure 1-A Hosselton, N½ NW SE 10-2n-7e, flowed 405 bbl., McClosky 3,038-50 ft., T.D. 3,057 ft.

Pure 1 B. F. Dobbs, N½ NW SW 10-2n-7e, dry at 3,102 ft., Glen Dean 2,510 ft., Aux Vases 3,001 ft., McClosky 3,085 ft.

Pure 2 Pearce Consol., N½ SW NW 10-2n-7e, dry at 3,218 ft., Glen Dean 2,512 ft., McClosky 3,090 ft.

Pure 1 Staley, S½ NE SW 10-2n-7e, flowed 1,383 ft., McClosky 3,067-75 ft., T.D. 3,080 ft.

Pure 2-A L. A. Pearce, N½ SW NE 10-2n-7e, flowed 1,087 bbl., McClosky 3,047-62 ft., T.D. 3,065 ft.

Woburn, Bond County: Magnolia 5 Joel Elam, SE SE SW 3-6n-2w, pumped 3 bbl. oil and 11 bbl. water, Benoist sand 1,011 ft., T.D. 1,033 ft.

Woodlawn, Jefferson County: R. B. Martin 1 Rosenberg, SW NE NW 35-2s-1e, pumped 20 bbl. oil and 1 bbl. water, Benoist 1,975 ft., T.D. 1,983 ft.

L. B. Jackson 4 T. Myers, SE SE NE 34-2s-1e, dry at 1,823 ft., Cypress sand 1,814 ft.

L. B. Jackson 2 T. Myers, NE SE NE 34-2s-1e, pumped 40 bbl., Benoist sand 1,982 ft., T.D. 1,998 ft.

Levy et al 1 C. Hall, SW NW SE 36-2s-1e, dry at 2,013½ ft., Glen Dean 1,630 ft., Benoist 2,000 ft.

TEXAS GULF COAST

Two Frio Sand Pools Opened, Others Showing in Wilcox

By NEIL WILLIAMS

HOUSTON, Tex.—With the new year only 2 weeks old, the Texas Gulf Coast district listed two new fields in Jackson and Chambers counties, while production tests were being made on two prospective pool openers in Tyler and San Jacinto counties. In the meantime, several locations in proven fields were reported abandoned due to the OPM Order M-68 regulating well spacing, but no large decline in drilling operations were reported.

J. G. Mayo et al 1 A. C. Rodesney, midway between the Ganado and Mauritz fields, Jackson County, was cleaning out, flowing at the rate of 5 bbl. of fluid per hour through ⅛-in. choke, with tubing pressure 525 lb., and shut-in casing pressure 750 lb. Ninety-five per cent of the fluid was 28.5-gravity oil and the balance was wash water with no trace of salt water. This well showed for a gas-distillate producer the previous week at 5,508-12 ft., and crude production was obtained by squeezing off and retesting at 5,408-14 ft. Just what relation the new strike has with the Ganado or Mauritz fields cannot be determined at this time, but appears to be another typical Marginulina-Frio sand discovery in this area and future development will be watched with wide interest.

Another Frio sand discovery was opened in Chambers County as Rowan & Nichols Oil Co. 1 W. H. Land, south of the Anahuac field in the S. P. Donley Survey, was flowing at the estimated rate of 4 bbl. of 57-gravity distillate and 3,000,000 cu. ft. of sweet gas daily while testing through a 12/64-in. choke. Tubing pressure was 2,900 lb., and shut-in casing pressure 3,180 lb. This well was drilled to a total depth of 9,195 ft., and production is from the basal Frio sand at 9,034-37 ft. the lower member of several sands logged in the Marginulina-Frio formation which was topped just below 8,200 ft.

Two Wilcox Tests Showing

Operators interested in Wilcox sand development centered their attention on two wildcats in Tyler and San Jacinto counties where casing was cemented for testing. In the southeastern part of Tyler County, about 1 mile northwest of the new Fred field and approximately 1½ miles southwest of the Joe's Lake field, Republic Production Co., and Houston Oil Co. 1 Cushing, T. Cushing Survey, was bottomed at 8,035 ft., with 5½-in. casing cemented at 8,025 ft. after two drill-stem tests in the Wilcox sand recovered pipe-line oil. Sand with thin shale breaks showing oil and gas was cored at 7,946-58 ft., where a 1-hour drill-stem test recovered 270 ft. of oil, 90 ft. of oil and mud, 65 ft. of fresh water and tested 25 lb. working pressure. The well was then cored ahead recovering sandy shale with a slight show of oil at 7,962-67 ft., and sand showing oil from 8,001-07 ft. A 25-minute drill-stem test at 8,001-07 ft. was made and the well flowed oil in 15 minutes, and flowed oil by heads for 1 hour and 10 minutes with working pressure building up to 225 lb. When the drill stem was broken down, 1,950 ft. of oil and 60 ft. of oily mud was recovered.

The well topped the Hockleyensis at 4,349 ft., Operculina at 5,030 ft., Cockfield sand at 5,090 ft., and the Wilcox at 7,885 ft. Based on top of the Wilcox, the well is approximately 245 ft. higher than the discovery well of the Fred field and over 200 ft. lower than the Joe's Lake field. The discovery well of the Fred field was completed for a small producer at 8,180-8,200 ft., and it is possible that this well was drilled on the extreme south edge of the structure. However, additional development will have to be done before this can be determined.

In San Jacinto County, Shell 1 Central Coal & Coke Co., James Roberson Survey, was bottomed in the Wilcox at 8,305 ft., and 5½-in. casing was cemented on bottom preparatory to testing sands which showed up favorable on an electrical survey. This well has been drilled extremely tight, and no information has been released as to where the well will be tested. It is northeast of the Fostoria field, a new Cockfield sand discovery, and due west of the Shepherd field, opened last year as the first producing area in the county.

TEXAS GULF COAST COMPLETIONS

Wildcats

Fort Bend County: Sterling 1 Shanks, dry, T.D. 9,267 ft.

Fields

Chocolate Bayou, Brazoria County: Phillips 2 Triangle Development Co., 194 bbl., ⅛-in. choke, perf. casing 9,918-22 ft., T.D. 10,313 ft.

Clodine, Fort Bend County: Houston 3 E. E. Thompson, 79 bbl., 3/32-in. choke, T.D. 7,543 ft., P.B. T.D. 7,534 ft.

Conroe, Montgomery County: H. L. Hunt 1 Koonce, dry, T.D. 5,110 ft.

H. L. Hunt 1-A Koonce, dry, T.D. 5,110 ft.

J. N. Rayzor 1 Brent, dry, T.D. 5,080 ft.

Danbury, Brazoria County: Rowan Drilling Co. 15 Jameson, 90 bbl. 20 hr., ¼-in. choke, T.D. 4,020 ft., P.B. T.D. 3,450 ft.

Dyersdale, Harris County: H. C. Cockburn 16 Burkett, 425 bbl., ¼-in. choke, sand 4,059-72 ft.

Jack Frazier 2 Clauder, 60 bbl. fluid, 8 per cent salt water, ¼-in. choke, perf. casing 4,060-76 ft., T.D. 4,077 ft.

Fannett, Jefferson County: Gulf 10-E Marrs McLean, 202 bbl., ¼-in. choke, perf. casing 8,368-99 ft., T.D. 8,450 ft.

Lolita, Jackson County: L. Crouch 1 T. S. Mays, 98 bbl., ⅛-in. choke, perf. casing 5,936-43 ft., T.D. 5,974 ft.

Humble B-9 L. Ranch, 166 bbl., ⅛-in. choke, sand 5,389-92 ft.

Humble 27 Mitchell, 116 bbl., 7/64-in. choke, perf. casing 5,939-42 ft., T.D. 5,944 ft.

Magnet, Wharton County: Humble 50 Cockburn, 78 bbl., ⅛-in. choke, sand 5,534-40 ft.

Maurbro, Jackson County: Humble 3 Drushel, 497 bbl. ¼-in. choke, sand 5,225-37 ft.

Old Ocean, Brazoria County: Harrison & Abercrombie 1 G. S. Woody, 508 bbl., ¼-in. choke, top sand 10,063 ft., T.D. 11,026 ft.

Orange County: Dishman & Lucas 2 Ellen Bland, 24 bbl. oil and 300 bbl. salt water, 21 hr., pumping, T.D. 3,145 ft.

Oyster Bayou, Chambers County: Sun 7 Felix Jackson, 310 bbl., ¼-in. choke, perf. casing 8,262-8,310 ft., T.D. 8,319 ft.

Pierce Junction, Harris County: Hamil & Smith 6 Parson, 105 bbl., 10/64-in. choke, T.D. 3,418 ft.

West Columbia, Brazoria County: Hogg Oil Co. 1 Pitkin & Carroll, well blew out, caught fire, abandoned, T.D. 1,435 ft.

Texas 45 Abrams, 341 bbl., ¼-in. choke, perf. casing 5,708-30 ft., T.D. 5,772 ft.

West Ranch, Jackson County: L. Crouch 2 State-Lavaca River, 132 bbl., ⅛-in. choke, perf. casing 5,570-85 ft., T.D. 5,771 ft.

Magnolia 190-A West Ranch, 226 bbl., ⅛-in. choke, perf. casing 5,718-32 ft., T.D. 5,735 ft.

Magnolia 201-A West Ranch, 93 bbl., ⅛-in. choke, perf. casing 5,592-5,602 ft., T.D. 5,605 ft.

Magnolia 219-A West Ranch, 93 bbl., ⅛-in. choke, perf. casing 5,592-5,602 ft., T.D. 5,605 ft.

Abe Seibel 1 Benneview Development Co., 108 bbl., ¼-in. choke, perf. casing 5,761-65 ft., T.D. 5,800 ft.

Withers, Wharton County: F. W. Michaux 19-A Pierce, 162 bbl., 5/32-in. choke, sand 5,413-15 ft.

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Anadarko Basin Play Speeded By Location of Two More Tests

By ROBERT INGRAM

TWO more wildcats were staked last week in extreme western Kansas in the increasing Anadarko basin play. One was Helmerich & Payne, Inc., 1 Bitner, SE 16-30-42w, in Stanton County, some 25 miles west of production in the Hugoton gas field. The other was Sinclair Prairie Oil Co. 1 Exchange Bank, SE SW 27-33-19w, in Comanche County, 16 miles southeast of the Morrison field of Clark County.

Already drilling in the same region as the Helmerich & Payne test were two wildcats just across the state line in eastern Colorado. Closest of these was Stanolind Oil & Gas Co. 1 Snell, SE SW 7-20s-41w, in Kiowa County. East of the 1 Snell, Stanolind was developing the Patterson pool which it opened in 1941 from a Cherokee stray sand in Kearny County.

The Bitner well is in an area which has had little exploration except for the systematic campaign undertaken by Stanolind in the general region which surrounds the Hugoton gas field. This region lies on the northwest corner of the Anadarko basin which is sometimes called the Dodge City basin. Stanolind has taken leases covering an estimated 200,000 acres running north and south on both the Colorado and Kansas sides of the state line.

The Sinclair Prairie test also is in an area generally considered a part of the Anadarko basin play but is related more to the pools in Barber County to the east where some interesting developments have taken place in recent weeks. Of importance to this play was the discovery of Simpson sand production at Lake City in Barber County in November. The new test is the first in Comanche County in 4 years, the last having been I.T.I.O. 1 McMoran, 25-34-16w, which was dry in the Ordovician.

Two New Pools

Two new pools were officially recognized marking the first discoveries of the new year. They were:

Kowalsky Arbuckle of Barton County, tapped by the 1 Kowalsky of Sinclair Prairie in 32-20-11w, 1½ miles southwest of the Silica pool, and Schweizer Viola of Reno County, opened by Hinkle Oil Co. 2 Schweizer in 31-33-9w, 2 miles northeast of the Hendrickson pool.

McLouth Area Described

Kansas oil pool nomenclature committee reported through Chairman E. C. Moncrief that it had defined the area within the active McLouth pool of Jefferson County, in northeastern Kansas.

Acreage mentioned was all of Sections 17, 20, 21, 27, 28, 29, 30, 31, 32, 33 and 34 of Township 9s-20e, and Sections 3, 4, 5, 6 and 8 of Township 10s-20e. The committee found two common sources of oil supply within the area, the Bartlesville sand showing both gas and oil and the Mississippi lime only oil.

KANSAS COMPLETIONS

Wildcats

Barber County: Deep Rock 1 Skinner, W½ NW SW 21-31-14w, swabbed 41 bbl. oil and 20 bbl. water, Viola 4,531 ft., Arbuckle 4,773 ft., shot 4,695-4,710 ft. and 4,661-95 ft., acid, *discovery*.

Barton County: J. J. Lynn 1 Kraft, S½ SE NW 36-16-11w, swabbed 58 bbl. for temporary potential, Arbuckle 3,357 ft., 5-in. 3,356 ft., acid, Lansing 3,332 ft., conglomerate 3,340 ft., T.D. 3,370 ft., *discovery*.

Cowley County: Trees Oil 1 Deichman, NW NW SW 24-31-4e, flowed 265 bbl. in 8 hr., potential 795 bbl., gravity 42.6, Bartlesville 2,835 ft., *discovery*.

Norton County: Helmerich & Payne and Phillips 1 Conway, SE NE 7-3-23w, dry, anhydrite 1,915 ft., Topeka 3,227 ft., Lansing 3,376 ft., base Kansas City 3,590 ft., granite wash 3,623 ft., T.D. 3,640 ft.

Pottawatomie County: Olson and McCole 1 Anderson estate, N½ SW NW 1-8-7e, temporarily abandoned, Lansing 930 ft., T.D. 1,195 ft.

Pratt County: Falcon-Seaboard et al 1 Randle, E½ SE NE 28-28-13w, dry, Mississippi 4,309 ft., Viola 4,350 ft., Simpson dolomite 4,430 ft., some show oil, T.D. 4,597 ft.

Russell County: M. B. Armer, Inc., 1 Gregory, SW SW SW 23-14-12w, dry, anhydrite 605 ft., Fort Riley 1,525 ft., Topeka 2,548 ft., Lansing 2,904 ft., Arbuckle 3,251 ft., T.D. 3,265 ft.

Central Petroleum 1 Ney, NE NE NW 2-15-12w, dry, anhydrite 585 ft., Fort Riley 1,485 ft., Topeka 2,495 ft., Lansing 2,840 ft., Arbuckle 3,194 ft., T.D. 3,214 ft.

Stafford County: Continental Oil 1 Jo Holmes, SE SE SE 9-24-13w, dry, Arbuckle 4,083 ft., T.D. 4,118 ft.

Fields

Bemis-Shutts, Ellis County: Sinclair Prairie 4 Slimmer, SE SW SW 19-11-16w, potential 750 bbl. pumping, Arbuckle 3,328 ft., acid, T.D. 3,337 ft.

Aylward Production 4 Mels, E½ NW NW 6-12-17w, potential 960 bbl. pumping, Arbuckle 3,672 ft., acid, T.D. 3,679 ft.

South Big Creek, Russell County: H. C. Bennett et al 1 Mitchell, W½ NW SE 6-15-14w, pumped 89 bbl., Lansing 2,930 ft., acid, T.D. 2,974 ft.

Bloomer, Ellsworth County: Gulf Oil 11 Grizzell, S½ SE NE 31-17-10w, potential 3,000 bbl. pumping, Arbuckle 3,222 ft., acid, T.D. 3,229 ft.

Burnett, Ellis County: Dickey Oil 3 Carmichael-D, W½ SE SW 8-11-17w, pumped 69 bbl., Arbuckle 3,370 ft., acid, 7-in. 3,371 ft., T.D. 3,376 ft.

Clover gas, Cowley County: Ralph Wixson et al 1-A Clover, SE SE 8-31-7e, old well, old T.D. 1,463 ft., T.D. 2,013 ft., dry.

Couch, Cowley County: Leavell Coal 1 Kennedy, NE NW SW 12-20-5e, pumped and flowed 1,548 bbl., Bartlesville 2,825 ft., T.D. 2,843 ft.

Cunningham, Pratt County: Springrose Drilling 2 Sitton, N½ SE NW 35-27-11w, pumped and flowed 656 bbl., Lansing 3,462-96 ft., acid, T.D. 3,550 ft.

Eberhardt, Rice County: Cities Service 1 J. Doll, W½ SW NW 19-19-10w, gaged 3,047,000 cu. ft. gas, Lansing 3,030-41 ft., acid, T.D. 3,365 ft., P.B. 3,093 ft.

Eldorado, Butler County: Cities Service 210 Wilson, SW NE SW 8-25-5e, pumped 17 bbl. oil and 40 bbl. water, Kansas City 1,958 ft., acid, T.D. 2,025½ ft.

Cities Service 87 Pierpont, SE SE NW 33-25-5e, pumped 5 bbl. oil and 95 bbl. water, Kansas City 1,949 ft., acid, T.D. 2,000 ft.

Frog Hollow, Cowley County: Leader Oil and Zephyr Drilling 10 Moon, NW SW SW 16-32-5e, flowed 956 bbl., Bartlesville 3,041 ft., shot, T.D. 3,065 ft.

Hall-Gurney, Russell County: Phil-Han Oil 8 Letsch, N½ NE NW 34-14-13w, potential 875 bbl. pumping, Lansing 2,857 ft., acid, T.D. 2,874 ft.

Haverhill, Butler County: S. E. Duncan et al 1-A Reetz, NW SW SE 34-27-5e, pumped 35 bbl., Viola 3,113 ft., T.D. 3,114 ft.

Kipp, Stafford County: Skelly 3 Kipp-E, S½ NW NW 26-25-14w, pumped and flowed 2,051 bbl., Lansing 3,849 ft., acid, T.D. 3,900 ft.

Kraft-Prusa, Barton County: Lauck & Moncrief et al 2 Rieman, S½ NW SW 10-17-11w, dry, Arbuckle 3,314 ft., T.D. 3,340 ft.

McLouth, Jefferson County: Williard Archie et al 2 Schrader, SW SW 28-9-20e, dry, Mississippi 1,419 ft., T.D. 1,595 ft.

Morel, Graham County: Continental 2 Trexler, NW SW NW 15-9-21w, potential 1,551 bbl. pumping, Arbuckle 3,669 ft., acid, T.D. 3,701 ft.

Peace Creek, Reno County: Cities Service 3 Kreis-B, NE SW SE 21-23-10w, flowed 3,000 bbl., Viola 3,772 ft., acid, T.D. 3,781 ft.

Ritz, McPherson County: Nadel et al 1 Thompson, SE NE SW 26-19-2w, pumped 10 bbl. oil and 75 bbl. water, Mississippi 2,913 ft., T.D. 2,953 ft.

Severy, Greenwood County: Page & Cook 2 Hebb, SW NE NE 8-28-11e, dry, Kansas City 1,195 ft., T.D. 1,233 ft.

Jack Ray et al 1 Miller, NW NW SE 8-28-11e, pumped 5 bbl., Kansas City 1,218 ft., T.D. 1,222 ft.

West Silica, Barton County: Iron Drilling 1 Bacon, S½

(Continued on Page 73)

North American's Dallas Plant

DEPENDS ON LAYNE WELLS AND PUMPS

Startling the Nation by going into production just one hundred and twenty days after construction began, the Dallas plant of North American Aviation, Inc., is now rolling out their famous Army AT-6A and Navy SNJ-3 Scout Trainer Planes. Factory and assembly space is completely air conditioned as an aid to accuracy, speed and efficiency in manufacturing.

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CALIFORNIA FIELD REPORT

Drilling Operations Fail to Show Anticipated Decline

By L. P. STOCKMAN

LOS ANGELES, Calif.—Drilling operations last week had not yet begun to reflect the expected restriction in development. A number of companies had already made requests for priority ratings on several wells and all wells drilling on December 23 were being carried forward to completion without the necessity of securing priorities.

Meantime, California operators were confronted with several problems that require clarification and determination of status. At the last meeting of the Conservation Committee of California Oil Producers, a subcommittee of the Production Commitee for District 5, members asked that the chairman attempt to clarify the status of multiple zone wells and areas in which certain zones are not being produced. The request was made by an operator in the Wilmington field where a number of wells have been completed in the Ranger, upper Terminal and lower Terminal zones.

The Wilmington field is split into five blocks or segments and it is possible for operators in certain blocks to suspend production in certain zones as there is no migration of oil and gas from one block to another. In one block in this field operators are not producing the upper Terminal zone, which is the most prolific of the three, with the result that production of wells is relatively low.

Then, in computing allowables for the month of January, the production committee took actual production and penalized operators for curtailing production in compliance with previous orders. This matter will ultimately be remedied but for January there can be no alleviation.

Navy to Recondition Elk Hills Reserve Wells

The Navy Department has indicated its intention of undertaking remedial work on a number of wells in the Elk Hills Naval Reserve and will put them in shape to produce at a moment's notice. The department recently filed 53 notices with the California Department of Natural Resources indicating its intention to undertake work on 16 wells on the Hay property in 36-30s-23e, in addition to 13 wells on the Carmen property adjoining. These two properties were acquired by the Navy as a result of litigation with Standard Oil Co. involving the celebrated Section 36 case. A total of seven wells in 36-30s-23e, also in the case will be reconditioned.

On the E., G. and I. properties, originally held by the old Pan American Petroleum Co., the department will recondition a total of 17 wells. The E., G. and I. leases were acquired from Pan American following the Teapot Dome scandal of a number of years ago. The case involving Standard Oil Co. was not one of a criminal nature but simply a case of title in which the government prosecutor proved that title to the property never passed to the State of California from whom the properties were subsequently obtained.

Second Jacalitos Well

Wilshire Annex Oil Co. is installing pumping equipment in No. 21-26-E at Jacalitos in 26-21s-15e, after the failure of the well to show a natural flow. This is the company's second well in the Jacalitos field which it discovered a few months ago and it is believed it should show production comparable with the discovery well. Production in this field is coming from the Temblor and although well production is comparatively small (about 150 bbl. daily) drilling costs are also low.

The productive interval is found at 3,700 ft. and because the subsurface formations are relatively soft a well in the Jacalitos field can be drilled from spud to completion in about 30 days. Wilshire-Annex Oil Co. is committed to drill two additional wells in this field immediately unless development work is restricted by priorities. The Temblor in this well was topped at 3,680 ft. and consists of a porous body which contains some gas but not enough to kick over the well.

Heavy Crudes Sought

There has been a very pronounced movement in California to step up the production of heavy unrefinable crude oil during the past several weeks and the movement is still continuing. New wells have been drilled in the Mount Poso, Edison, Kern River and other fields yielding heavy oil and if the Production Committee of District 5 recognizes the necessity of producing more heavy crude oil next month additional wells will be drilled.

In the Edison field, Paul Getty successfully completed 1 Portals flowing 250 bbl. per day of 19-gravity oil and this outpost will lead to additional drilling. At Kern River, drilling operations are centered out in the Kern Front and around the edge of the old field. The depth range is from 400 ft. in the old field to about 1,900 ft. out in the Kern Front area. Shell, General Petroleum and ohers have finished several new wells in he Mount Poso field during the past 60 days but recent drilling has not been any too satisfactory due to a high water cut in the productive Vedder in the edge of the zone.

SAN JOAQUIN VALLEY COMPLETIONS

Arvin, Kern County: Standard 2-4 Jewett, 16-31s-29e, pumped 35 bbl., 34.2-gravity, 25 per cent cut, T.D. 6,250 ft., perf. 5,855-6,109 ft., 6,110-6,248 ft., recompleted after being deepened from 6,110 ft.

Edison, Kern County: Jergins Oil Co. 9 Hershey, 14-30s-29e, pumped 50 bbl., 15.2-gravity, 15 per cent cut, T.D. 1,684 ft., P.B. 1,680 ft., perf. 1,360-1,680 ft., Santa Margarita 1,535 ft., Walker 1,644 ft., basement schist 1,670-84 ft.

Wood-Callahan Oil Co. 1 Kohn, 21-30s-29e, pumped 192 bbl., 14.5-gravity, 0.2 per cent cut, T.D. 3,708 ft., perf. 3,535-3,700 ft., Santa Margarita.

Mount Poso, Kern County: Eyer Oil Co. 2 Poso, 28-26s-28e, pumped 40 bbl., 15.1-gravity, 50 per cent cut, T.D. 1,640 ft., P.B. 1,593 ft., perf. 1,553-66 ft., 1,576-85 ft., completed in Vedder zone.

Shell 10 Matthew fee, 4-27s-28e, pumped 15 bbl., 15-gravity, 90 per cent cut, T.D. 1,830 ft., perf. 1,777-1,830 ft., Vedder 1,750 ft.

Shell 11 Matthew fee, 4-27s-28e, pumped 50 bbl., 15.1-gravity, 70 per cent cut, T.D. 1,794 ft., perf. 1,730-94 ft., Vedder oil sand 1,713-94 ft.

Raisin City, Fresno County: Seaboard 66-13 S.T.U., 13-15s-17e, flowed 8,000,000 cu. ft. gas 10/64-in. and 18/64-in. beans, pressures 1,000/1,560 lb., T.D. 5,973 ft., P.B. 5,112 ft., perf. 5,012-20 ft., 5,037-43 ft., 5,078-5,111 ft., completed in Shell gas zone, Kreyenhagen 5,957 ft., gas sand 4,978 ft.

Shell 7-18 Properties, Inc., 18-15s-18e, flowed 450 bbl., 23.7-gravity, 1.1 per cent cut, 95,000 cu. ft. gas, 20/64-in. bean, pressures 120/160 lb., T.D. 5,225 ft., P.B. 5,070 ft., perf. 5,031-70 ft., completed in Shell oil zone of Miocene age, gas zone 4,991-5,002 ft. not open to production.

Rio Bravo, Kern County: Union 34-28 Crites, 28-28s-25e, flowed 1,230 bbl., 40.2-gravity, 0.6 per cent cut, 1,300,000 cu. ft. gas, 22/64-in. bean, tubing pressure 1,350 lb., T.D. 11,490 ft., perf. 11,331-11,487 ft., completed in Rio Bravo zone 11,335 ft. and Vedder zone 11,407-90 ft. of Miocene age.

Rio Vista, Sacramento County: Standard 3 State, 6-3n-3e, flowed 18,523,000 cu. ft. gas, 48/64-in. bean, pressures 1,690/1,575 lb., T.D. 4,502 ft., perf. 4,086-4,501 ft., Rio Vista gas zone.

Tipton wildcat district, Tulare County: Richfield 1 Hewitt, 1-21s-25e, abandoned in slate, T.D. 3,486 ft., no showings logged.

Tupman, Kern County: Richfield 47-27-C Kern County Land, 27-30s-25e, flowed 2,174 bbl., 33.5-gravity, 0.2 per cent cut, 2,000,000 cu. ft. gas, two 96/64-in. beans, pressures 200/1,500 lb., T.D. 9,394 ft., perf. 9,152-9,388 ft., completed in Stevens oil sand.

Richfield 63-33-A Kern County Land, 33-30s-25e, flowed 1,773 bbl., 33.2-gravity, 5 per cent cut, 1,540,000 cu. ft. gas, two 96/64-in. beans, pressures 225/700 lb., T.D. 9,290 ft., perf. 8,825-9,030 ft., 9,069-9,284 ft., completed in upper and lower Stevens zones.

Many Producers Shut Down in Coastal District Fields

All fields in the coastal district with the possible exception of Elwood were feeling the effects of disrupted transportation. In order to prevent rapid accumulation of crude oil, they have either shut down entirely or severely reduced production. As a result of this rather general suspension of production the current daily production of the coastal district is approximately 25,000 bbl. per day below the area's January allotment of 84,506 bbl. daily. The Capitan field which is located at tidewater has been shut down entirely and Padre Canyon and San Miguelito with allotments of 1,211 bbl. and 3,400 bbl. per day are producing 309 bbl. and 320 bbl. per day respectively.

The Rincon field, another district located at tidewater is currently producing 571 bbl. per day against an allotment of 3,901 bbl. Interior fields such as Santa Maria and Santa Maria Valley have also been severely curtailed. The former's production has been reduced 4,200 bbl. per day and the latter has 10,000 bbl. per day shut in. Ventura Avenue for the first time in several years is producing below its January allotment for much the same reason. When transfers of allotments were possible as under the now dead uniform method of allotment it was customary to shut in some other high production cost field and transfer the allotment to Ventura Avenue. The new production plan for California discourages any transfers of allotment although provision is made in special cases with the approval of the production committee.

The Santa Maria Valley field discovered several years ago by Union Oil Co. has 10 strings of tools in operation and would have continued quite active for another several months had there been no interruption in marine transportation. Early in 1941, Union Oil Co. completed a coking unit at its Oleum refinery which was to be operated to produce to the coke stage in conformity with an agreement with Pacific Gas & Electric Co. The disruption of marine transportation has forced a change in plans.

LOS ANGELES BASIN COMPLETIONS

Dominguez, Los Angeles County: Shell 128 Reyes, 33-3s-13w, flowed 544 bbl., 33.9-gravity, 2 per cent cut, 425,000 cu. ft. gas, 128/64-in. bean, pressures 50/400 lb., T.D. 7,900 ft., perf. 7,216-7,403 ft., 7,430-7,514 ft., 7,534-70 ft., 7,590-7,666 ft., 7,686-7,753 ft., 7,778-7,895 ft., completed in sixth, seventh, and eighth Callender zones.

Huntington Beach, Orange County: Southwest Exploration Co. 44 State, 3-6s-11w, pumped 850 bbl., 23.6-gravity, 0.2 per cent cut, T.D. 5,405 ft., perf. 4,530-5,405 ft., completed in Huntington Beach tideland accumulation by directional drilling.

Torrance, Los Angeles County: L. A. Basin Pet. Co. 3 Phillips, 30-4s-13w, flowed 101 bbl., 19.5-gravity, 2 per cent cut, 16/64-in. bean, pressures 40/150 lb., T.D. 3,743 ft., gravel-packed perf. 3,150-3,743 ft., completed in equivalent of Ranger zone.

Only Four Rigs Running At Inglewood

Drilling operations in the Inglewood field of Los Angeles County where operators are developing the Sentous zone of Miocene age have been

reduced to the point where there are at present only four strings of tools in operation. This is important because if future wells are limited to one well to not less than 40 acres it will force operators in that field to extend the limits of work or hang up tools.

Up to the present drilling operations have been limited to the northwest end of the field where independent operators succeeded in finding enough acreage to justify deep drilling. The original Sentous zone discovery was made in the extreme southwestern end of the Inglewood structure but this well, 1 Sentous of R. R. Bush Oil Co., failed to hold up and finally settled to about 25 bbl. per day after being on and off production at frequent intervals extending over several months. In the meantime, Federal Oil Co. moved on to the Smith lease in the northwestern end of the field and began drilling a deep test.

Subsequently drilling operations were suspended and R. R. Bush Oil Co. made a deal with Federal whereby the former would go back into the latter's outpost and would receive in return a portion of Federal's leases. Bush ultimately completed the Federal well but drilled a deep dry hole on the acreage it secured from the latter. Federal Oil Co. has good production in the Inglewood field, but the Bush Oil Co., which proved up Federal's acreage when the latter decided to quit, has a current production of about 25 bbl. daily.

Other operators holding productive acreage in the Sentous zone at Inglewood include Hogan Petroleum Co., Jergins Oil Co., Jefferson Oil Co., Standard Oil Co., Tide Water Associated Oil Co. and Texas Co. Sentous zone production in the Inglewood field at the present time is 2,640 bbl. per day against an allotment for the month of January of 1,798 bbl. daily. Upper zones in this field are producing 12,147 bbl. per day and have an allotment of 15,811 bbl.

COASTAL DISTRICT COMPLETIONS

Santa Maria Valley, Santa Barbara County: Apex Pet. Corp. 1 O'Donnell, 28-10n-34w, pumped 350 bbl., 15.5-gravity, 3 per cent cut, T.D. 5,440 ft., perf. 5,140-5,440 ft., completed in probable Monterey.

Capitol Co. 2 O'Donnell, 28-10n-34w, pumped 150 bbl., 15.1-gravity, 5 per cent cut, T.D. 5,350 ft., perf. 4,835-5,249 ft., completed in probable Monterey.

Hancock & Bush 6 Bradley, 26-10n-34w, flowed 371 bbl., 15.5-gravity, 5 per cent cut, 128/64-in. bean, S.I. pressures 50/700 lb., T.D. 4,723 ft., perf. 4,095-4,720 ft., completed in Monterey.

Macrate & Sons 5 Fernandez, 26-10n-34w, flowed 325 bbl., 15.9-gravity, 5 per cent cut, 128/64-in. bean, S.I. pressures 50/950 lb., T.D. 4,485 ft., perf. 3,966-4,485 ft., completed in Monterey.

Kansas Fields

(Continued from Page 71)

SW SW 8-20-11w, pumped 447 bbl., Arbuckle 3,297-3,301 ft., acid, T.D. 3,315 ft.

Sugarloaf, Ellis County: Derby Oil et al 2 Miller, N½ SW SW 17-13-17w, dry, base Kansas City 3,666 ft., T.D. 3,704 ft.

Trapp, Russell County: Cities Service 6 Mai-A, E½ NE SW 24-15-14w, potential 928 bbl. pumping, Arbuckle 3,349 ft., acid, T.D. 3,355 ft.

Shell 9 Ehrlich-B, W½ W½ SW 1-16-14w, potential 1,272 bbl. pumping, Arbuckle 3,270 ft., acid, T.D. 3,285 ft.

Shell 5 Schneider-C, SW SE NE 2-16-14w, pumped 593 bbl. oil and 34 bbl. water, Arbuckle 3,293 ft., acid, T.D. 3,309 ft.

Vaughn, Russell County: Cities Service 5 Vaughn, NW NW SW 17-14-14w, old well, old T.D. 3,069 ft., Lansing 3,025 ft., T.D. 3,117 ft., pumped 860 bbl. oil and 75 bbl. water.

Voshell, McPherson County: Shell 5 Koehn, W½ SW NE 16-21-3w, pumped 138 bbl., Simpson sand 3,368-78 ft., acid and shot, T.D. 3,380 ft.

Wilkens, Ellsworth County: Derby Oil 2 Peterman, E½ E½ SE 11-17-10w, dry, Arbuckle 3,289 ft., T.D. 3,303 ft.

Nebraska Fields Shut Down

ST. JOSEPH, Mo.—For several days virtually all activities in the Forest City basin have been suspended. Northwest Missouri and Southeast Nebraska were snowed in part of the time and the weather was so cold that little progress could be made.

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A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORP.

OHIO, INDIANA, KENTUCKY

New Pool Is Opened in Ohio; More Good Wells at Clayton

ZANESVILLE, Ohio.—A test on the northwestern edge of Clayton pool, in Perry County, found gas pay gaging just under 1,000,000 cu. ft., while an inside test made an initial of 102 bbl.

The Oriskany was absent in the Magnolia 1 D. Giovannoe test at Lordstown, Trumbull County; top of lime 2,782 ft., drilling ahead at 3,175 ft.

OHIO COMPLETIONS

Ashland County, Jackson Township: Konrad & Bew 3 H. E. Morr, Sec. 21, 60,000 cu. ft. gas, shot, Berea, T.D. 702 ft.

Athens County, Athens Township: O'Mara et al 4 Cincinnati Mining Co., Lot 175, 40,000 cu. ft. gas, stray, T.D. 790 ft.

Bern Township: Bern O. & G. 1 W. S. Denison, Sec. 12, dry, Maxon (water), T.D. 975 ft.

Bern Oil & Gas Co. 2 Myron Kenny, Sec. 11, dry, Maxton sand, T.D. 1,143 ft.

Canaan Township: Wallace et al 1 Fred H. Dorr, Fraction 6 at Canaanville, 50,000 cu. ft. gas, second Berea, T.D. 1,390 ft.

Carthage Township: Snider et al 2 C. E. Pennybecker, Sec. 17, dry, Salt sand, T.D. 1,102 ft.

Holmes County, Richland Township: H. E. Perkins 1 fee (map Samuel Lipton), NW Sec. 5, 20 bbl., Clinton sand, T.D. 3,132 ft.

Knox County, Butler Township: Knox Exploration Co. 2 John Frye, Lot 7, show gas, plugged, Clinton, T.D. 3,107 ft.

Union Township: Ewing et al 1 Millwood Sand Co., Sec. 25, show oil, plugged, Clinton, T.D. 2,756 ft.

Licking County, Licking Township: Industrial Gas 10 H. J. Davis, Fleatown, dry, Cinnamon shale, T.D. 1,400 ft.

Madison Township: W. Davidson et al 2 Christian Youse, second quarter, dry, Clinton, T.D. 2,782 ft.

Moore Bros. 1 Floyd Brown, second quarter, dry, Clinton, T.D. 2,750 ft.

Newton Township: Gail Earley et al 4 Ray Gardner, 300,000 cu. ft. gas, Clinton, T.D. 2,622 ft.

Medina County, Hinckley Township: Harry Dempsey 1 J. and Olga Frank, Lots 52 and 53, 3,000,000 cu. ft. gas and 2 bbl., Clinton sand, T.D. 3,185 ft.

Meigs County, Orange Township: H. B. Walker & Co. 1 E. A. Person, Sec. 36 at Alfred, 100,000 cu. ft. gas, first Berea, T.D. 1,650 ft.

Rutland Township: Fleming et al 4 E. Burford, Sec. 22, 300,000 cu. ft. gas, Maxon, T.D. 903 ft.

Monroe County, Bethel Township: Pure Oil 3 Mary Martin, Sec. 33, 1 bbl., lime 1,078-1,107 ft.; (old well deepened through Squaw-dry, P.B. to lime). T.D. 1,328 ft.

Malaga Township: Spangler & McCort 1 Susanna Morris heirs, Sec. 35, 100,000 cu. ft. gas, shot, Berea, T.D. 1,855 ft.

Muskingum County, Harrison Township: Ohio Fuel 23 Carl Staker, Sec. 11, 1,100,000 cu. ft. gas, Clinton 4,189-4,224 ft., T.D. 4,227 ft.

Harrison Township: Wasson & Co. et al 1 Charles Howell, SE Sec. 31, flowed 18 bbl. first day after shot, will make a 15-bbl. pumper, show of gas in Clinton sand, oil from Medina, T.D. 4,105 ft.; this appears to be 1 mile from nearest production.

Noble County, Enoch Township: Gerst and Moseley Oil & Gas Co. 3 William J. Schott, NW Sec. 27, filled up with water from Macksburg 500-ft. sand, T.D. 571 ft.

Noble Township: F. W. Fassett 6 J. B. Hayes, NW Sec. 34, 5-bbl. pumper, Macksburg 300-ft. sand, T.D. 245 ft.

Perry County, Clayton Township: Pure Oil 3 Bert Williams, Sec. 7, 102 bbl., shot, Clinton, T.D. 3,206 ft.

Palm Oil Co. 4 J. W. Amerine et al, Sec. 9, dry, Clinton, T.D. 3,300 ft.

Preston Oil 1 Joseph A. Wilson, Sec. 6, 940,000 cu. ft. gas, Clinton 3,138-60 ft.

Monroe Township: Berea Oil & Gas Co. 1 Charles Weaver, SE Sec. 15, 3 bbl., Berea, T.D. 1,187 ft.

Corning Producing Co. 1 Israel Dennis heirs, NE Sec. 30, dry, Clinton sand, T.D. 3,725 ft.

Thorn Township: Palm Oil Corp., Inc., et al 1 Lola Cooper, SE Sec. 14, 95 bbl. and 2,000,000 cu. ft. gas, Clinton sand, T.D. 2,835 ft.

Palm Oil Corp., Inc., et al 1 Ivan M. Hamm, SE Sec. 14, 20 bbl. after shot, Clinton sand, T.D. 2,815 ft., this oil was swabbed.

Tuscarawas County, Clay Township: Egan & Murphy 1 J. F. Gooding, Lot 22, dry, Berea, T.D. 1,184 ft.

Jefferson Township: Brendel Prod. Co. 1 R. H. Williamson, Sec. 12, show oil, plugged, Berea, T.D. 1,200 ft.

Washington County, Barlow Township: H. F. McTaggert, Sec. 7, 420,000 cu. ft. gas, Maxburg 800-ft. sand, T.D. 1,388 ft.

Liberty Township: Interstate Gas Co. 2 Lola Roberts, Sec. 15, 50,000 cu. ft. gas, Salt sand 620-72 ft.; (Keener dry); T.D. 1,270 ft.

Ludlow Township: Beardmore Oil Co. 6 Perry Cline, Sec. 14, 150,000 cu. ft. gas, shot, Berea, T.D. 1,980 ft.

Wesley Township: Orndoff & Burt 1 H. L. Rudolph, Sec. 5, 280,000 cu. ft. gas, Maxburg 800-ft. sand, T.D. 930 ft.

EASTERN KENTUCKY COMPLETIONS

Magoffin County: Bed Rock Petroleum Co. 35 J. H. Arnett, Burning Fork, T.D. 1,301 ft., 3 bbl., shot.

Pike County: Kentucky-West Virginia 5363 Winston G. Stratton, Shop Branch of Mare Creek, T.D. 2,913 ft., shale, gaged 133,000 cu. ft. gas.

Kentucky-West Virginia 5369 Elizabeth Robinson, Johns Creek, T.D. 2,799 ft., brown shale, gaged 133,000 cu. ft. gas.

WESTERN KENTUCKY COMPLETIONS

Hancock County, Hawesville district: Zanetis & Bendas 2 Sam Meserve, dry, deepened from 953 ft. to 1,063 ft.

Henderson County, Bluff City district: Barrett et al 1 Otto Breitchu, dry, T.D. 2,253 ft.

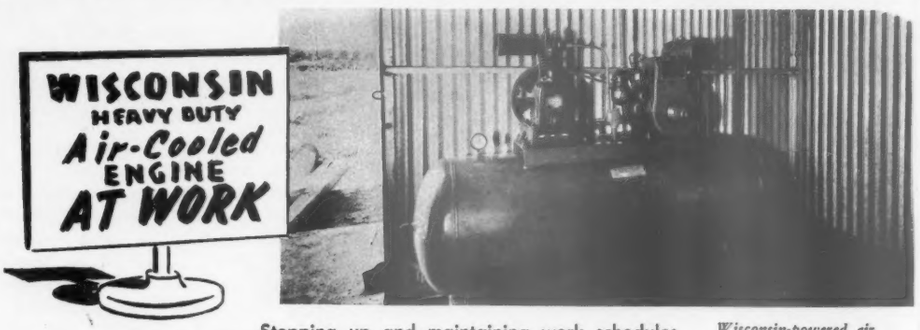
Ohio County, Pleasant Ridge Church district: Cottrell et al 15 A. R. Renfro, 10 bbl., 40-qt. shot, Jett sand 211-31 ft.

Union County, Morganfield distirct: Ohio 2 Briscoe, 20 bbl., stray sand 1,315-29 ft., T.D. 1,335 ft.

Mount Vernon Extension Makes 140-Bbl. Well From Mansfield

EVANSVILLE, Ind.—Carter 4 Erwin, NE NW NE 1-7s-14w, ½ mile north of other production in the Mount Vernon field, swabbed and flowed 140 bbl. in 24 hours from the Mansfield sand, a new pay for the area, and is to be put on pump. The sand was encountered at 1,274-1,300 ft. Other production in the area is from the Waltersburg and Cypress sands which did not appear commercial at 4 Erwin.

Carter has not started any new tests in the area, pending clarification of the 40-acre spacing rule announced by the OPC. Sinclair-Wyoming has shut down its operations in the area for the same reason.



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Production Shows in Caddo Lime Tested at Two Wells

By D. H. STORMONT

WICHITA FALLS, Tex.—The Caddo lime was to be tested in Throckmorton County by Walter Neustadt 1 Morrison, Section 1614, T.E.&L. Survey, 10 miles south of the town of Throckmorton. No. 1 Morrison was preparing to test a show logged in the Canyon lime series from 2,936-49 ft. Operator drilled to 4,257 ft. and set 7-in. casing at 3,093 ft.

The wildcat topped the Caddo lime at 4,177 ft. and drilled a slight show at 4,184-86 ft. Operator drilled to 4,257 ft. and ran electrical survey on the test before setting casing. Plans were to perforate casing opposite the Caddo lime from 2,936-49 ft., where electrical survey indicated a good show of oil.

Another test of the Caddo lime was being made in Young County, 3 miles east of Graham, at J. P. Lohan 1 Hazelton, Harmon Survey, which was bottomed in the lime at 3,915 ft. Operator has cemented 7-in. casing at 3,845 ft. and treated the wildcat with acid. At the end of the week operator was testing after the acid treatment.

Jack County Caddo Lime Area

In the Caddo lime pool, opened last November by Taubert & McKee 1 M. Hoefle, A. James Survey, several operations are now active. Most interesting is Anderson-Prichard Oil Corp. 1 Hoefle, A. James Survey, a north offset to the discovery well, which found Caddo lime production at 4,817-35 ft. for an estimated daily potential of 900 bbl. No. 1 Hoefle logged the top of the Caddo lime at 4,846 ft. and cored from 4,854-67 ft., recovering 1 ft. of fragmentary lime with slight oil stains. Operator is continuing to core.

A south offset to the discovery, Hanlon-Buchanan, Inc., 1 Hoefle, A. James Survey, is bottomed at 4,906 ft. Operator has set 5½-in. casing at 4,869 ft. and is drilling plugs for test.

Two other tests are working in the area which may become a major oil pool in the district. Taubert & McKee 1-A Hoefle, Block 3, J. W. Barrett Survey, is temporarily delayed at 3,035 ft. because of the bad weather. The same operators' 1-B Hoefle, Block 9, Barrett Survey, has spudded and set surface casing.

Three Wildcats Staked

Three wildcat tests were staked in the district during the week. All will be drilled by Sinclair Prairie Oil Co., which is rapidly becoming one of the most active wildcat operators in North Texas. The new tests were:

Montague County: Sinclair Prairie 1 J. Collier, 740 ft. from the southwest and 500 ft. from the southeast lines of the south 46.2 acres of the J. Collier Survey, Abstract 1212, about 6 miles southwest of Saint Jo.

Grayson County, Collinsville area: Sinclair Prairie 1 G. W. Wheeler, 660 ft. from the north and west lines of a 100-acre lease on the Charles Quillen Survey 989, about 1½ miles southwest of two small wells which have been producing from 3,922-70 ft. in the Strawn sand since 1937.

Archer County: Sinclair Prairie 1 Mary Sloop, SE SE NW Section 8, Block 1, H.&T.C. Survey, southeast of Vogtsberger in the northeastern part of the county. Contracted to 6,000 ft., 1 Sloop is about 3 miles northeast of the firm's 1 Coleman, Block 6, Coleman subdivision, 5 miles north of Scotland, which, at last reports, was drilling below 1,365 ft. toward contract depth of 6,000 ft.

NORTH TEXAS COMPLETIONS

Wildcats

Clay County: Webb & Taylor Drlg. Co. 1 T. T. Ryan, Sec. 11, Byers subd., dry at 1,219 ft.

Continental 1 E. Spring, Sec. 24, H.&T.C. Sur., 150 bbl. in 8 hr., 28/64-in. choke, est. 400 bbl., top Caddo 5,588 ft., pay 5,592-5,630 ft.

Denton County: Hunt Oil Co. 2 T. J. Jones, J. Thomas Sur. A-1239, dry at 2,463 ft.

Montague County: Youngblood, Foree & Stogner 1 C. D. Meador, J. B. Miller Sur. A-461, dry at 6,505 ft.

Throckmorton County: Humble 2 Allie McKnight, Sec. 2, D.L.&C.C. Sur. A-1264, 27 bbl. oil and 73 bbl. water in 24 hr., pumping, 500 gal. acid 4,042-60 ft.

Wise County: Hunt Oil Co. 1 W. H. Halman, G. W. Cash Sur. A-160, dry at 6,015 ft., top Caddo 5,486 ft.

Fields

Briar Creek, Young County: Panhandle Refining Co. 3 C. W. Guinn, F. Jaime Sur., 58 bbl. in 24 hr., ¼-in. choke, est. 20 bbl., 30-qt. shot 2,758-66 ft., T.D. 2,907 ft., old well drilled deeper.

Coleman, Clay County: Shell 3-A E. D. Coleman, Sec. 24, Calhoun C.S.L. Sur. A-80, 627 bbl. in 4 hr., ¾-in. choke, est. 1,800 bbl., 3,000 gal. acid 6,313-60 ft., top Caddo 5,912 ft., T.D. 6,478 ft.

Griffin, Archer County: Deep Oil Dev. Co. 6-A E. P. Griffin, Sec. 13, Palo Pinto C.S.L. Sur., A-339, 41 bbl. in 24 hr., pumping, pay 1,626-28 ft.

Deep Oil Dev. Co. 5 W. T. Waggoner, Sec. 1, H.&T.C. Sur., dry at 1,711 ft.

Hull-Silk, Archer County: Guy J. Brown 5-E J. J. Perkins, Sec. 27, Lge. 3, Denton C.S.L. Sur., 9 bbl. in 24 hr., pumping, pay 1,550-1,600 ft.

Jack, Jack County: Hanlon-Buchanan 3 F. M. Myers, S.P. Sur. A-1592, 120 bbl. in 24 hr., pumping, pay 2,401-07 ft.

K.M.A., Wichita County: Hanlon-Buchanan 26-E Fassett & Tuttle, Sec. 4, S.A.&M.G. Sur. A-582, 54 bbl. in 3 hr., ¾-in. choke, est. 290 bbl., 100-qt. shot 4,041-69 ft., T.D. 4,074 ft.

Hanlon-Buchanan 30-G Fassett & Tuttle, J. Wisdom Sur. A-572, 54 bbl. in 3 hr., 5/6-in. choke, est. 290 bbl., 110-qt. shot 4,035-64 ft., top K.M.A. 3,892 ft.

Hammon, Hanlon-Buchanan 44 Fassett & Tuttle, Sec. 1, E.T. Sur. A-76, 66 bbl. in 3 hr., ¾-in. choke, est. 275 bbl., 90-qt. shot 3,957-76 ft., top K.M.A. 3,801 ft., T.D. 3,980 ft.

Deep Oil Dev. Co. 17-A S. I. and H. M. Munger, Sec. 31, K.W.V.F. Sur., 64 bbl. in 3 hr., ½-in. choke, est. 225 bbl., pay 3,750-3,800 ft., T.D. 3,820 ft.

Deep Oil Dev. Co. 25-A S. I. and H. M. Munger, Sec. 31, K.W.V.F. Sur., 27 bbl. in 24 hr., pumping, pay 1,058-61 ft.

Deep Oil Dev. Co. 24-A S. I. and H. M. Munger, Sec. 30, K.W.V.F. Sur., 68 bbl. in 3 hr., pumping, est. 125 bbl., 330-qt. shot 3,780-3,852 ft., top K.M.A. 3,688 ft., T.D. 3,879 ft.

Tide Water 1 Anna Mangold, Sec. 38, P. Castleman Sur. A-35, 104 bbl. in 3 hr., est. 500 bbl., 3,000 gal. acid 4,276-81 ft., top K.M.A. 3,616 ft., top Ellenburger 4,174 ft., T.D. 4,282 ft.

Golding & Cochran 11 D. R. Preston, Sec. 27, Blk. 7, H.&T.C. Sur. A-119, 107 bbl. in 12 hr., est. 150 bbl., 1,900 gal. acid 4,456-67 ft., old well drilled deeper.

Cappoch & Coleman 19 W. L. Warren, Sec. 32, K.W. V.F. Sur., 87 bbl. in 24 hr., pumping, pay 1,763-65 ft.

Thweatt & Whittaker 1 G. R. Hodge, Sec. 38, K.W. V.F. Sur., dry at 1,800 ft.

Tide Water 16 C. Pettit, E. Durain Sur., 263 bbl. in 3 hr., ¾-in. choke, 3,000 gal. acid 4,190-4,292 ft., top K.M.A. 3,624 ft., top Ellenburger 4,190 ft.

Venmex Oil Corp. 1 Big Wichita River Bed, Wichita River, 120 bbl. in 3 hr., ¾-in. choke, est. 500 bbl., pay 4,219-4,307 ft., top K.M.A. 3,645 ft., top Ellenburger 4,219 ft.

Venmex Oil Corp. 3 Big Wichita River Bed, Wichita River, 164 bbl. in 3 hr., est. 134 bbl., ¾-in. choke, pay 4,275-86 ft., top K.M.A. 4,237 ft.

Falls Ref. Co. 1 J. B. Tidwell, W. H. Spillers Sur. A-257, 20 bbl. oil and 110 bbl. water in 24 hr., pumping, pay 4,419-22 ft., top Ellenburger 4,419 ft., T.D. 4,422 ft., old well drilled deeper.

Mathis, Jack County: Hanlon-Buchanan 2 B. A. Smith, Sec. 2, B.S.&F. Sur. A-2339, 22 bbl. in 24 hr., pumping, 10-qt. shot 3,275-84 ft., T.D. 3,392 ft.

Hanlon-Buchanan 3 B. A. Smith, Sec. 2, B.S.&F. Sur. A-2339, 63 bbl. in 12 hr., 24/32-in. choke, est. 95 bbl., pay 2,870-93 ft., T.D. 2,899 ft.

Wilbarger, Wilbarger County: Big Six Oil Co. 2 A. P. Morris, Sec. 3, Blk. 14, H.&T.C. Sur., 63 bbl. in 3 hr., est. 120 bbl., pumping, pay 3,150-70 ft., T.D. 3,292 ft.

W. T. Waggoner 35-AA W. T. Waggoner, Sec. 14, Blk. 13, H.&T.C. Sur., 24 bbl. in 24 hr., pumping, pay 1,700-05 ft.

Phillips 11-G W. T. Waggoner, Sec. 42, Blk. 4, H.& T.C. Sur., 81 bbl. in 3 hr., 9/64-in. choke, est. 275 bbl., pay 3,768-78 ft., top Ellenburger 3,766 ft.

Miscellaneous Fields

Archer County: E. T. Johnson 1 L. F. Wilson, Sec. 83, A.T.N.C.L. Sur., dry at 1,641 ft.

Shappell Oil Co. 40 Grace Bell, Sec. 27, Blk. 5, Clark & Plumb Sur., 10 bbl. in 24 hr., pumping, pay 978-85 ft.

Craig & Wilson 1 Bill Threet, Sec. 92, Jefferson C.S.L. Sur. A-240, dry at 1,145 ft.

Hanlon-Buchanan 1 W. O. Hayter, Sec. 2415, T.E.&L. Sur., dry at 1,480 ft.

Producers Dev. Co. 7 C. H. Roach, Sec. 1595, T.E.&L. Sur., 24 bbl. in 24 hr., pumping, pay 1,264-76 ft.

Producers Dev. Co. 8 C. H. Roach, Sec. 1595, T.E.&L. Sur., 9 bbl. in 24 hr., pumping, pay 1,263-75 ft.

Clay County: Sussex Oil Corp. 11 E. H. Hamilton, Sec. 83, Byers Bros. subd., 66 bbl. in 24 hr., pumping, pay 1,112-28 ft.

Bobby Burns 10 E. H. Hamilton, Sec. 83, Byers Bros. subd., dry at 1,325 ft.

Perkins & Cullum 8-B C. T. Taylor, Sec. 42, Bacon's subd., 17 bbl. in 3 hr., est. 75 bbl., pumping, pay 1,068-81 ft.

Johnson & Kouri 1-B C. T. Taylor, Sec. 55, Bacon's subd., dry at 1,160 ft.

Houston Bowers 4 S. W. Rice, Sec. 14, Thornberry subd., 23 bbl. in 3 hr., pumping, est. 70 bbl., pay 1,115-28 ft.

E. G. Boardman 1 First Texas Joint Stock Land Bank, Sec. 13, Thornberry subd., 9 bbl. in 24 hr., pumping, pay 1,130-50 ft., T.D. 1,170 ft.

Cooke County: Seitz, Comegys & Seitz A. J. Dennie, J. S. Stump Sur. A-695 ft., dry at 1,723 ft.

Kewanee Oil Co. 19-B R. J. Timmis, E.T. Sur. A-363, 25 bbl. oil and 7 bbl. water in 24 hr., pumping, 40-qt. shot 1,260-88 ft., T.D. 1,489 ft.

Trumter Petroleum Corp. 14-B C. E. Stacey, J. Clark Sur. A-194, 48 bbl. in 24 hr., pumping, pay 760-70 ft.

C. B. Christie 5 Felderjoff, Sec. 24, George Ivy Sur. A-516, 12 bbl. in 24 hr., pumping, 5-qt. shot 767-73 ft., T.D. 794 ft.

Montague County: Lesh & McCall 2 C. L. Davenport, J. Fitch Sur., 30 bbl. in 3 hr., pumping, est. 90 bbl., pay 2,484-90 ft., old well drilled deeper.

Continental 1 S. J. Hott, Ed O'Conner Sur. A-580, 135 bbl. in 24 hr., pumping, pay 1,747-69 ft., old well drilled deeper.

Throckmorton County: Burk Royalty Co. 23 A. M. Houseley, Sec. 28, Comanche Ind. Res., 65 bbl. in 24 hr., pumping, pay 662-702 ft., T.D. 704 ft.

Wichita County: Francis Ann Dickinson 19 Francis Ann Dickinson, Sec. 6, G.C.&S.F. Sur. A-625, 6 bbl. in 24 hr., pumping, pay 694-710 ft., T.D. 820 ft.

Charles E. Morrison 1 L. B. Slaughter, Sec. 21, H.& G.N. Sur. A-142, dry at 1,830 ft.

Continental 53-F S. B. Burnett, Sec. 2, H.T.&B. Sur. A-507, dry at 2,002 ft.

Hammon, Hanlon-Buchanan 49-E Fassett & Tuttle, Sec. 1, E.T. Sur. A-76, 17 bbl. in 24 hr., pumping, pay 618-28 ft.

C. F. Schramm 3 Albert Daume, Sec. 1, S.P. Sur., 10 bbl. in 24 hr., pumping, pay 678-80 ft.

Wolfe & Hull 1 Albert Daume, Sec. 1, S.P. Sur. A-429, 12 bbl. in 24 hr., pumping, pay 682-91 ft.

Young County: Lotson & Worthington 2 J .E. Boley, Sec. 194, T.E.&L. Sur., 10 bbl. in 24 hr., pumping, pay 1,068-80 ft.

N. D. Goldsmith 7 J. R. Wilson, Sec. 162, T.E.&L. Sur., dry at 1,018 ft.

Pemeta Oil Co. 13 Y. Swain, Sec. 1465, T.E.&L. Sur., dry at 715 ft.

L. T. Burns 1 Gillie M. Morrison, Sec. 246, T.E.&L. Sur., 15 bbl. oil and 50 bbl. water in 24 hr., ¾-in. choke, 2,500 gal. acid 3,980-4,030 ft., top Caddo 3,980 ft.

Charles E. Knox 4 W. D. Worsham, Sec. 1975, T.E. &L. Sur., 9,150,000 cu. ft. gas, 3,000 gal. acid 4,354-70 ft., top Marble Falls 4,354 ft., T.D. 4,441 ft.

Anzac Oil Corp. 3 E. S. Graham, Sec. 5, Allen Hines Sur. A-135, 46 bbl. in 24 hr., pumping, pay 2,862-67 ft.

Shackelford County Discovery Well Estimated at 300 Bbl.

FORT WORTH, Tex.—Testing continued throughout the week at R. H. Roark 2-A J. H. and R. B. Elliott, now considered one of the most important discoveries in Shackelford County in several years. No. 2-A Elliott was reported last week when it indicated oil production from a section of the lower Strawn at 2,902-40 ft. after a 100-qt. nitroglycerin shot. The well is flowing by heads as testing continues. One flow was estimated at 50 bbl. of high gravity oil and observers estimate that 2-A Elliott will make 300 bbl. of oil daily.

In drilling, the test showed for about 100 bbl. of oil daily, natural flow, from the Strawn section. However, this was passed up to test the

(Continued on Page 83)

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Among the Drilling

Manila Shortage Forces More Care In Use of Lines by Well Crews

PROBABLY the first severe shock of war to be felt by the drilling industry will be the shortage of manila hemp for the cordage so widely used on the rigs. This material will be increasingly difficult to obtain as the war in the Pacific continues because the bulk of manila fiber comes from that area. There is some production in Mexico and Central America, but demand exceeds supplies from alternate sources.

Crews generally can prolong the life of catlines and spinning lines by careful operation, handling and storage. A length of cable attached to the working end of the catline or a piece of chain attached to the spinning line will cut down wear and reduce the length of rope required. These ropes are subjected to wetting but if proper care is taken in drying them they will not be damaged. Keeping the ropes free from oil is important as the crude petroleum removes the natural lubricant in the fiber.

Drilling crews also may have numerous opportunities to splice ropes, something not done in normal times. Principal reason for aversion of rotary crews to a spliced line is the accident hazard and the constant danger of its fouling on the cathead. If it becomes necessary to use a spliced line, the man should be cautioned and every possible means taken to prevent an accident.

McCLANAHAN & VENABLE, Dallas, Tex., have been awarded contract for O. F. Wenecker's wildcat test, between Wills Point and Edgewood in northwestern Van Zandt County, Texas. Location is on the Continental Assurance Co. land in the R. C. Morris Survey.

BIG WEST Drilling Co., Dallas, Tex., has taken over contract for C. R. Starnes 1 Jackson, in the Dillard Survey, Smith County, Texas, and is now moving in rotary to resume drilling at 2,920 ft.

HOLLANDSWORTH Drilling Co., Longview, Tex., has taken contract for a 5,000-ft. wildcat test, in the southeast corner of Henderson County, 2 miles north of Frankston, Tex., for Iowa-Payne Oil Co., of Tyler, Tex. Location is on the Weesner 85.5-acre tract in the Mathew Goliher Survey, on acreage obtained on farmout from Humble Oil & Refining Co.

TOM GRAHAM, Corpus Christi, Tex., received contract for a 6,100-ft. wildcat from the Texas Co. for 1 Carroll, located 4 miles northeast of Taft, Tex. Location is in Section 11 of the Taft Farms subdivision.

HARRY L. EDWARDS Drilling Co. is expected to open a new field in coastal Louisiana for the Ohio Oil Co. as preparations were being made to test 1 Lacassine Co., bottomed at 10,325 ft. Contractor cemented protective casing in a deep test for the Continental Oil Co., in the St. Charles field, Aransas County, Texas, while in the North La Ward field, Jackson County, Texas, one rotary is running for Harrison & Abercrombie.

CLARENCE POTTS, Saginaw, Mich., has received contract for Bridger Basin Oil Corp. 1 Armintrout, NE SW SW 34-2n-13w, Allegan County, Michigan.

PARKER Drilling Co., Tulsa, is moving tools to Continental Oil Co. 1 Frederick Bonnett location, E½ SE SW 8-2s-6w, Calhoun County, Michigan, in the same district in which the drilling firm recently completed a gas well in the operating company's first exploratory effort in the state. The new operation may be carried to the St. Peter.

H. C. WILLIAMS, Mount Pleasant, Mich., contractor, is drilling a Hopkins County, Michigan, test for Frank S. Vahue on the Lynn Stone farm, SE NE NW 7-3n-12w.

ROWAN Drilling Co., Houston, Tex., opened a new field, south of Anahuac, in Chambers County, Texas, with completion of Rowan & Nichols 1 W. H. Land which is flowing gas and distillate through a 12/64-in. choke while testing through perforated casing at 9,034-37 ft.

GLENN H. McCARTHY, Houston, Tex., received contract from Sinclair Prairie Oil Co. for a well in the Goodrich field, Polk County, Texas, and a rotary has been moved to location. Meanwhile, contractor has reached interesting depths on two of his wells in the Magnolia and Stowell fields in Montgomery and Chamber counties, Texas, which may define or extend the limits of the field. Another test is under way in the Bailey's Prairie area, Brazoria County, Texas.

MUSKEGON Development Co., Muskegon, Mich., has been awarded contract for Regal Dutch Petroleum Co. 3 Wamhoff, NE NW NE 18-3n-12w, Hopkins County, Michigan.

TURNER Drilling Co., Centralia, Ill., has started work on 1 Williams, N½ SW SW NW 6-6n-2e, Fayette County, Illinois. Operators were fishing at 1,898 ft.

FALCON-SEABOARD Drilling Co., Houston, Tex., is moving a rotary to the Gibson field, Terrebonne Par-

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Contractors

ish, Louisiana, where contract was received to drill a deep test for Shell Oil Co., Inc. Another operation is reported in Catahoula Parish for the Sinclair Prairie Oil Co.

HEWGLEY Drilling Co. of Valley, Miss., has the contract on what will be one of the deepest tests ever drilled in Sunflower County, Mississippi. It is the Ohio Oil Co. 1 Percy Ray, NW NW 36-18n-5w. Contract depth of 5,000 ft. was reached but a promising core at this level led to the decision to deepen an additional 1,000 ft. It has topped the Clayton at 4,075 ft., Selma 4,150 ft. and Eutaw at 4,732 ft.

MacKINNIE Oil & Drilling Co., Casper, Wyo., has proven gas production in the Elk basin district of Wyoming. The company replaced rotary with cable tools for completion. The well is producing gas from the Dakota sand from 3,142-54 ft., at the rate of 3,000,000 cu. ft. daily.

HOUSTON Drilling Co., Houston, Tex., drilling for J. G. Mayo et al midway between the Ganado and Mauritz fields, Jackson County, Texas, reperforated casing in 1 A. C. Rodesney and the well is flowing pipe-line oil while testing through perforated casing at 5,408-14 ft.

NEWMAN BROTHERS Drilling Co., San Antonio, Tex., last week completed a discovery producer for Highland Oil Co., 2 miles northeast of the Kreis field in Duval County, Texas. The drilling firm has an interest in the well which is on the L. de la Garza land, Survey 524. Production is obtained from sand at 3,306-11 ft.

GEORGE P. LIVERMORE, Lubbock, Tex., contractor and producer, addressed the petroleum engineering conference honoring Oklahoma University graduates at Norman, Okla., last week. Mr. Livermore talked on drilling and completion problems in the Permian basin. He was assisted by E. H. Holcomb of the Livermore organization.

GROOVER & ROSE, contractors of Albany, Tex., at the latter part of the week continued to test the R. H. Roark 2-A J. H. and R. B. Elliott, a Shackelford County, Texas, wildcat. The test had showings for an estimated 200 to 300-bbl. per day producer from the Strawn sand at a depth of 2,950 ft. The total depth was 4,367 ft. before plugging back.

BODINE Drilling Co., Great Bend, Kans., has assigned a rotary to location for 3 John Herter, C W½ SW 8-20-11w, in the Silica field, Barton County, Kansas.

NELSON Drilling Co., Great Bend, Kans., has started operations on its wildcat test in Gage County, Nebraska. The operation is on the Edius land, CWL E½ SW 5-3n-7e.

HAYES Drilling Co., Mount Vernon, Ill., is attempting completion in C-6 Cotner, 21-1s-12w, Wabash County, Illinois, which has been drilled to 2,005 ft.

Contractors Foresee Supply Order Similar to That Covering Mining

DRILLING contractors in particular and the oil industry in general will be aided in maintaining a satisfactory operating condition, if the P-98 order, is constructed along the same lines as the P-56 order under which the mining industry is obtaining supplies. Details of the mining order were explained last week by James Douglas, senior material analyst and chief administrator for production of copper.

Before Order P-56 was issued, miners had difficulty in obtaining enough essential machinery to keep the mines and concentrators operating. This order (P-56) gave an automatic blanket rating of A-3 for material, supplies and replacement parts necessary to keep the mining machinery in operation. An A-3 rating was also granted for new equipment on the application of the miners. For emergencies, OPM granted A-1-A ratings when requested by wire and informed that there was an actual breakdown. For anticipated emergencies a rating of A-1-C was granted; this allowed an operator to wire to OPM that a bearing, belt, chain, etc., was in danger of breaking, obtain a rating on the request and acquire the material in time to prevent work interruption.

In the case of the mines, regular outlet channels for equipment and machinery were allotted the necessary items and were permitted to distribute them. This was done after OPM had obtained a breakdown of maintenance and material supplies. The avenue of approach for obtaining material under P-56 was through the state coordinator. This plan is working out well in the mining industry and it is probable that the procedure for the oil and drilling industries will be somewhat similar.

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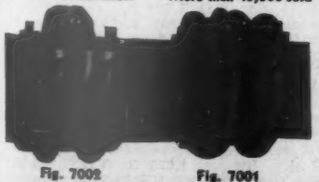
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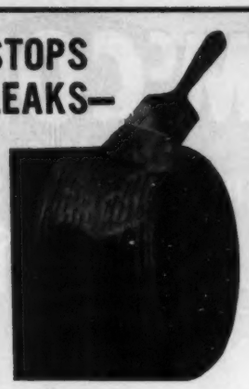
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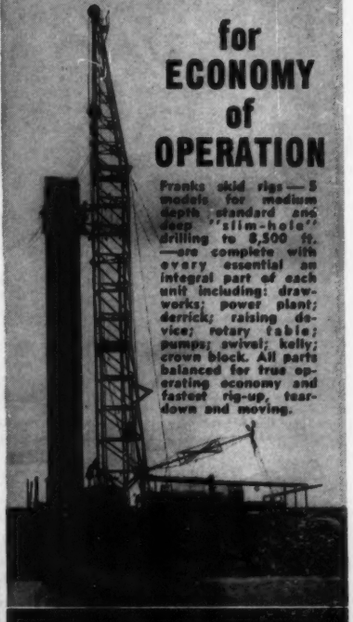
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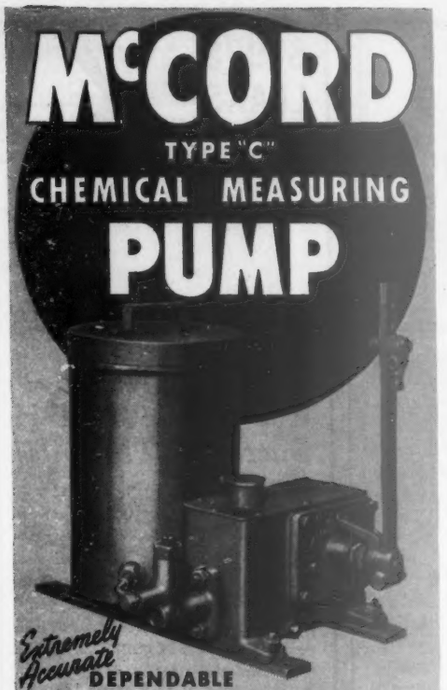

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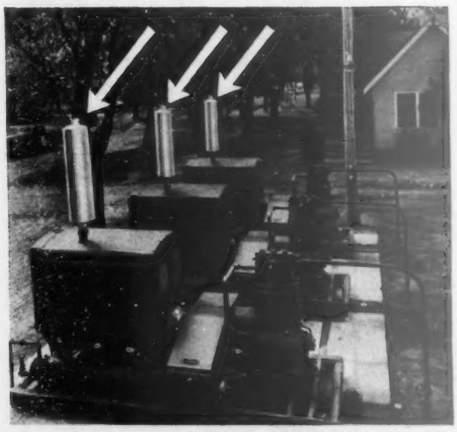

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Apache Well Increases Flow After Being Drilled Deeper

By ROBERT INGRAM

AFTER other wells had established that the producing sand at Apache is unusually thick, Sinclair Prairie Oil Co. last week deepened the first producing well in the field and increased production to about five times the original potential. The well was Sinclair Prairie 1 Lewis, NE NE SW 2-5-12w, which was first completed at a total depth of 3,342 ft. for 1,037 bbl. a day. Last week, after being deepened to 3,500 ft., it did 230 bbl. an hour on a 2-hour flow through tubing.

The 1 Lewis, which was completed ahead of the discovery well because of a blowout, is structurally the highest well in the field. It topped the Wilcox pay sand at 3,302 ft. and was about 64 ft. higher than the discovery. This penetration of 198 ft. was the deepest in the field, being greater than at 2 Lewis (see below).

The 9 producing wells and 11 drilling rigs at Apache have all been located on a 20-acre diagonal spacing pattern in accordance with an order of the state Corporation Commission, with wells spotted in the northeast and southwest 10 acres of each 40-acre unit. It was considered likely that operators in the field would seek to continue development on a 20-acre pattern. And, although it was not yet clear what basis would be considered by OPC for granting exceptions, it was generally believed that some weight would be given to the fact that Apache was the one new field in the state which had possibilities of major production to bolster sagging state-wide daily runs.

New Pool in Creek County

D. B. Malernee, who has had unusual success in discovering small overlooked pools in condemned territory has apparently opened up the first discovery for the state in the new year. His 1 Rowntree, SW NW SW 2-14n-7e, just south of the Big Pond area and east of Stroud, in southwestern Creek County, was spraying oil over the derrick and making an estimated 12,000,000 cu. ft. of gas daily from the Bartlesville sand at 3,127 ft.

The oil flow was reportedly increasing as the well was allowed to blow through the open 8-in. casing. It topped the Bartlesville at 3,117 ft. Earlier it tested a rainbow show of oil in the Prue sand at 2,608 ft. The test had drilled through the Prue and into the Bartlesville with cable tools with open hole from 2,600 ft. to the bottom.

Malernee discovered the prolific Rusk pool of Okfuskee County at 1 Beard, SE SW NE 7-11-8e, which made 1,017 bbl. natural at 3,695-3,710 ft. in the Cromwell sand.

Arbuckle Dry at Cumberland

The Pure Oil Co.'s first exploratory test to the Arbuckle lime has pretty definitely eliminated that formation for oil production in its three-county Cumberland field. A drill-stem test at 7,500 ft. in the Arbuckle showed no oil, gas or salt water and the test will be plugged back to the Oil Creek or the McLish sands or both. The two zones showed for production earlier.

Officials of the firm said that the Arbuckle was tested merely as a matter of course after the well had been carried down to the Oil Creek and that the dry hole did little or nothing to mar the overall aspect of the rich southern Oklahoma field which already has three major producing horizons and a possible fourth in the Hunton lime.

OKLAHOMA COMPLETIONS

Wildcats

Stephens County: Glenn Grimes et al 1-B Baker-B, SE NW NE 35-2s-8w, dry, lost hole, Arbuckle 1,770 ft.

Winkler-Carter 2 Peck, SE NE NE 1-3s-6w, flowed 78 bbl. oil and 15,000,000 cu. ft. gas, 28 gravity, pay 1,180-1,230 ft., T.D. 1,550 ft., *discovery*.

Fields

Apache, Caddo County: Sinclair Prairie 2 Lewis, NE SE SW 2-5-12w, flowed 237 bbl. in 4 hr. through 10/64-in. choke, flowed 88 bbl. in 10 min. through casing with 4-in. outlet, bromide 3,460 ft., pay 3,661-3,795 ft.

North Bebee, Pottawatomie County: Champlin 1 Robinett, NE NE NE 17-5-5, flowed 504 bbl., Hunton 2,206-2,449 ft., acid, T.D. 2,460 ft.

Chickasha, Grady County: Mid-Continent 1 B. A. Nicks, NW NW 27-5-8w, dry, Charlson 5,842-65 ft., T.D. 6,500 ft.

Depew, Creek County: Stanolind 4 Starr Unit, NW NW NE 18-15-8, flowed 150 bbl., Wilcox 3,835 ft., T.D. 3,850 ft.

Dilworth, Kay County: Virginia Oil 6 Fox, NW SW NE 19-28-1, pumped 75 bbl., Wilcox 3,312-21 ft., T.D. 3,321 ft.

Fish, Seminole County: Magnolia 1 Reed, NE SE SE 30-7-8, old well, old T.D. 4,186 ft., P.B. 2,948 ft. in Gilcrease, pumped 16 bbl.

Frederick, Tillman County: Johnson 2 Longacre, SW NE SE 32-2s-17w, pumped 25 bbl., pay 2,943-48 ft., T.D. 4,507 ft.

Guthrie, Logan County: Continental 5 Sults, SW SW NW 7-17-1w, flowed 281 bbl., Bartlesville 5,112 ft., T.D. 5,134 ft.

West Hewitt, Carter County: Smith 4 Ward, S½ SE SE 18-4s-2w, old well, old T.D. 2,161 ft., T.D. 2,310 ft. shot, pumped 250 bbl.

Hotulke, Pottawatomie County: Sinclair Prairie 2 Boyd, SE NE SE 21-9-4, pumped 428 bbl., Viola 4,443-53 ft., acid, T.D. 4,691 ft.

Little River, Seminole County: D. B. Malernee et al 3 Hamrick, NW SW NW 34-7-6, flowed 50 bbl., Earlsboro 2,751-70 ft.

Cities Service 5 Nitey, SW NE NE 2-7-6, old well P.B. 3,605 ft., dry.

South Maud, Pottawatomie County: Smith 2 Booze, NE SE SE 31-8-4, flowed 131 bbl. through ⅝-in. choke, Hunton 3,892-3,917 ft., acid.

Oklahoma City, Oklahoma County: British American 2 Shields, NE NW SW 15-11-3w, pumped 477 bbl., Wilcox 6,433 ft., shot, T.D. 6,517 ft.

British American 3 Shields, E½ NE SW 15-11-3w, pumped 253 bbl., Wilcox 6,410-6,512 ft., shot, T.D. 6,518 ft.

Peck, Lincoln County: Allied Materials 2 Peck, NE SE NW 35-14-6, old well, old T.D. 4,158 ft. in Wilcox, T.D. 4,193 ft. in second Wilcox, pumped 96 bbl.

St. Louis, Pottawatomie County: Elko Oil 2 Milburn, SE NW NW 15-7-4, old well, old T.D. 3,545 ft., dolomite 4,135 ft., T.D. 4,298 ft.

Reda Pump 1 Youngblood, SE SE NW 16-7-4, old well, old T.D. 4,131 ft., T.D. 4,158 ft., acid, pumped 724 bbl.

East Tecumseh, Pottawatomie County: Phillips 1 Homa, SE SW NW 16-9-4, pumped 175 bbl., Viola 4,652-75 ft., T.D. 4,726 ft.

Tussy, Carter County: Skelly 1 Tussy-A, SE SE NW 5-1s-3w, pumped 125 bbl., nav 3,146-60 ft., 3,205-18 ft., and 3,323-34 ft., T.D. 3,425 ft.

Northeast Wewoka, Seminole County: Alma Oil 1 Borden, NE SE NW 4-8-8, old well, old T.D. 4,326 ft., P.B. 4,025 ft., dry.

Miscellaneous

Creek County: Jake Glenn 2 J. W. Merritt, SW SW NW 26-18-7, pumped 10 bbl. oil and 20 bbl. water, Jones sand 1,848-1,900 ft., T.D. 1,905 ft.

Okfuskee County: W. O. Goodwin et al 1 Brown, SW SW NE 24-12-11, dry, T.D. 1,790 ft.

Texas 1 McKernan, N½ NW SW 15-12-9, old well, old T.D. 3,304 ft., Cromwell 3,283 ft., T.D. 3,322 ft., flowed 79 bbl. through ¼-in. choke.

W. B. Wells 2 Robinson, SE SE SE 24-10-11, pumped 15 bbl., Booch 1,995-2,015 ft., shot, T.D. 2,015 ft.

Okmulgee County: Lee 2-B Montgomery, W½ SE NE 31-12-12, pumped 18 bbl., sand 1,164-1,212 ft., T.D. 1,218 ft.

Osage County: E. E. Kirkpatrick 12 Osage, W½ SE NW 20-20-12, dry, Burgess 1,675 ft., T.D. 2,173 ft.

Ray O. Neal 1-A Osage, SE SE NE 11-21-8, pumped 25 bbl., Cleveland 1,579-92 ft., T.D. 1,602 ft.

Cities Service 1 Osage, SW SW NE 10-23-7, dry, T.D. 2,675 ft.

(Continued on Page 85)

New Pool Showing Northwest Of Shafter Lake District

By TOM BARBER

MIDLAND, Tex.—The possibility of opening a new oil-producing area 10 miles northwest of Shafter Lake in the northwestern part of Andrews County was seen at Fullerton Oil Co. 1 H. M. Wilson, Section 12, Block A-32, P.S.L. Survey. The prospect is being drilled as a tight operation but it is reported that best recovery on a series of drill-stem tests was obtained from a section of the Clear Fork lime (lower Permian).

No. 1 Wilson, with surface elevation of 3,382 ft., is contracted to 8,000 ft. and at the end of the week was drilling below 7,420 ft. toward contract depth. Previously, operator ran a series of five drill-stem tests on the prospect. The first drill-stem test from 6,806-7,055 ft. recovered 930 ft. of oil and gas-cut mud in 35 minutes. The second test from 7,009-7,109 ft. recovered only mud. On the third test, operator recovered 330 ft. of gas-cut mud, showing some oil, in 2 hours.

It was the fourth drill-stem test which showed definite promise of opening a new oil pool. This test was run from 7,222-7,324 ft. With tool open 45 minutes, 1 Wilson reportedly blew air the first 9 minutes, followed by gas estimated at 30,000 cu. ft. daily and finally a 10-minute oil flow. The oil tested 37.6-gravity and flowed an estimated 30 to 40 bbl. per hour. Unconfirmed reports credit the test with topping the Clear Fork at 7,310 ft. On the final test, 1 Wilson has a steady blow of air and returned 550 ft. of gas-cut drilling fluid in 1 hour. A sixth drill-stem test was made but the results were not announced. Operator plans to fulfill the 8,000-ft. drilling contract before making completion attempts.

Other Wells Testing

Also in Andrews County, Fuhrman Petroleum Corp. 1 M. A. Thornberry, Section 23, Block A-42, P.S.L. Survey, 1 mile southeast of the West Fuhrman pool, logged broken shows of oil from 4,360-4,540 ft. Operator treated with 3,000 gal. of acid and at last report it was making 3 bbl. of fluid per hour on gas lift. . . . In southeastern Yoakum County Sinclair Prairie 1 C. J. Kleiner, 3½ miles northwest of the Ownby pool, swabbed 25 bbl. of oil and 13 bbl. of water in 24 hours after treatment at plugged-back depth of 5,450 ft. Location is 330 ft. out of the NW cor. of Section 436, Block D, J. H. Gibson Survey. . . . A show of oil was reported for Moore Bros. 1 E. E. Brindley, Section 18, Block 33, T.&P. Survey, a ⅝-mile-northwest outpost to the Moore-Harding pool of Howard County. Lime recovered from two cores taken at 3,199-3,237 ft. carried broken shows with broken porosity showing oil, and operator continued to core ahead below 3,267 ft. in lime. . . . With elevation of 3,302 ft., George P. Livermore, Inc. 1 Moxley, Section 64, Block 20, H.E.&W.T. Survey, 15 miles southwest of Lubbock in Lubbock County, was reported logging the top of the Yates zone at 2,960 ft. Previously, 1 Moxley had topped the anhydrite at 2,060 ft. Operator is drilling below 3,535 ft.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Wildcats

Crosby County: George Callihan and C. D. Wagner 1 E. M. Wahlenmaier, elev. 2,655 ft., dry at 4,054 ft., top Yates sand 1,150 ft., top San Andres 2,117 ft.

Hockley County: Anderson-Prichard and American Drilling Co. 1 Ellwood, NW NW NW Sec. 15, Blk. A, R. M. Thomason Sur., elev. 3,427 ft., dry at 6,000 ft., top anhydrite 2,090 ft., top San Andres 3,950 ft.

Fields

Cedar Lake, Gaines County: Stanolind 4 Johnson, elev. 3,046 ft., 626 bbl., 840-qt. shot 4,630-4,785 ft.

Emma, Andrews County: Sinclair 14 Cowden, elev. 3,161 ft., 1,008 bbl., 3,000 gal. acid 4,180-4,260 ft.

Iatan-East Howard, Howard County: Sinclair 76 Dodge, elev. 2,244 ft., 223 bbl., 580-qt. shot 2,604-2,790 ft., T.D. 2,800 ft.

Seminole, Gaines County: H. W. Bass 8 Austin, elev. 3,323 ft., 658 bbl., ½-in. choke, 171-qt. shot 5,120-5,234 ft.

Magnolia and Atlantic 3-193 H. & J., elev. 3,286 ft., 584 bbl., ½-in. choke, 176-qt. shot 5,098-5,180 ft., T.D. 5,186 ft.

Sharon Ridge, Scurry County: P. J. Moran 1 E. W. Hardee, elev. 2,193 ft., 37 bbl. oil and 2 bbl. water, pumping, 200-qt. shot 1,623-65 ft., T.D. 1,804 ft.

Slaughter, Cochran County: Anderson-Prichard 5 Neal, elev. 3,675 ft., 486 bbl., 1 per cent water, 10,000 gal. acid 4,894-4,948 ft.

Anderson-Prichard 13 Neal, elev. 3,666 ft., 393 bbl., 10,000 gal. acid 4,900-44 ft.

Honolulu 16-18 Igoe & Smith, elev. 3,639 ft., 899 bbl., 2½-in. casing outlet, 10,000 gal. acid 4,983-5,023 ft.

Honolulu 25-4 Igoe & Smith, elev. 3,665 ft., 942 bbl., 2½-in. casing outlet, 10,000 gal. acid 4,930-5,030 ft.

Honolulu 26-17 Igoe & Smith, elev. 3,654 ft., 1,039 bbl., 2½-in. casing outlet, 5,000 gal. acid 5,000-40 ft.

Magnolia 21 Woodley, elev. 3,696 ft., 1,070 bbl., 3-in. casing outlet, 10,500 gal. acid 4,956-5,006 ft.

Slaughter, Hockley County: Gulf 2 Gordon, elev. 3,520 ft., 1,501 bbl., 12,000 gal. acid 4,984-5,070 ft.

Honolulu 13 Frazier, elev. 3,514 ft., 2,465 bbl., 2-in. casing outlet, 10,000 gal. acid 4,900-90 ft.

Magnolia 6-C Mallett, elev. 3,624 ft., 1,208 bbl., 3-in. casing outlet, 10,500 gal. acid 4,976-5,040 ft.

Magnolia 20-J Mallett, elev. 3,628 ft., 1,560 bbl., 3-in. casing outlet, 10,500 gal. acid 4,980-5,043 ft.

Magnolia 21-J Mallett, elev. 3,619 ft., 1,181 bbl., 3-in. casing outlet, 4,990-5,030 ft.

Stanolind 1 H. D. Martin, elev. 3,588 ft., 453 bbl., 9,000 gal. acid 4,845-4,950 ft.

Texas 15-G Mallett, elev. 3,589 ft., 1,601 bbl., 13,000 gal. acid 4,950-5,028 ft.

Texas 4-C Mallett, elev. 3,610 ft., 718 bbl., 13,000 gal. acid 4,985-5,035 ft.

Texas 71 Slaughter, elev. 3,535 ft., 1,979 bbl., 14,000 gal. acid 4,905-5,000 ft.

Texas 73 Slaughter, elev. 3,569 ft., 1,110 bbl., 15,000 gal. acid 4,950-5,007 ft.

Texas 78 Slaughter, elev. 3,560 ft., 1,490 bbl., 13,000 gal. acid 4,925-5,000 ft.

Texas 82 Slaughter, elev. 3,552 ft., 2,037 bbl., 13,000 gal. acid 4,900-5,025 ft.

Texas Pacific Coal 1 F. G. Graham, elev. 3,550 ft., 535 bbl., 3-in. casing outlet, 10,000 gal. acid 4,872-4,970 ft.

Texas Pacific Coal 5 Lauhoff, elev. 3,557 ft., 635 bbl., 3-in. casing outlet, 10,000 gal. acid 4,955-99 ft.

Slaughter, Terry County: Gulf 12 Mallett, elev. 3,506 ft., 1,123 bbl., 10,000 gal. acid 5,002-45 ft.

Wasson, Yoakum County: American Liberty 6 J. L. Futch, elev. 3,655 ft., 420 bbl., 10,000 gal. acid 5,060-5,225 ft.

American Liberty 8 Moore, elev. 3,632 ft., 410 bbl., 10,000 gal. acid 5,070-5,180 ft.

Drilling & Exploration Co. 4-C Hudson, elev. 3,648 ft., 414 bbl., 7/8-in. choke, 8,000 gal. acid 4,900-5,100 ft.

Drilling & Exploration Co. 8-A Randall, elev. 3,661 ft., 501 bbl., 4½ per cent water, 11/4-in. choke, 10,000 gal. acid 4,940-5,110 ft.

Humble 16 Randall, elev. 3,640 ft., 442 bbl., 7/8-in. choke, 3,000 gal. acid 5,010-5,107 ft.

Pecos County Discovery To Be Deepened

Pecos County's most recent discovery, Gulf and Wentz 2 Millar, Section 43, Block 11, H.&G.N. Survey, 4½ miles south of Grivin, which last week was reported officially completed to open a new Ellenburger lime oil pool for the county, was coring deeper in search of additional pay. On second potential test at 4,383 ft., total depth, 2 Millar flowed 384 bbl. of 33.7-gravity oil, cut 1 per cent with acid residue, through 2-in. tubing. Gas volume was 575,000 cu. ft. daily. Operators have cored from 4,383 ft. to 4,403 ft. without recovery and are coring ahead. They hope to pick up more pay before encountering granite, which halted Gulf and Wentz 1 Millar at 4,538 ft. without ever logging the Ordovician.

NEW ELLENBURGER WILDCAT

Pecos County: M. D. Bryant 1 J. A. McDonald, 1,100 ft. from the north and 2,490 ft. from the east lines of Sec. 46, Blk. 12, H.&G.N. Sur., a 5,000-ft. test expected to go to Ellenburger lime.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Wildcats

Crockett County: Jacobs & Gibson 1 University, University Sur., Blk. 29, Sec. 5, 990 ft. from S and E lines of survey, elev. 2,231 ft., dry at 1,850 ft.

Ector County: Texas Pacific Coal and Seaboard 1 Augusta Barrow, elev. 3,019 ft., dry at 4,949 ft., top anhydrite 1,990 ft., top Yates 3,170 ft., top solid lime 4,715 ft.

Fields

Abell, Pecos County: Anderson-Prichard 1 E. E. Wagner, elev. 2,381 ft., 141 bbl., 15/64-in. choke, top Tulip Creek 5,070 ft., top Sharp sand 5,820 ft., pay 5,825-48 ft.

Crockett, Crockett County: Gilcrease 14-13 University, elev. 2,317 ft., 100 bbl., pay 1,385-1,436 ft.

Goldsmith, Ector County: Gulf 379 Goldsmith, elev. 3,213 ft., 1,144 bbl., 4,000 gal. acid 4,192-4,282 ft.

Gulf 380 Goldsmith, elev. 3,150 ft., 413 bbl., pay 4,125-4,215 ft.

Gulf 381 Goldsmith, elev. 3,180 ft., 6,993 bbl., 4,000 gal. acid 4,140-4,245 ft.

Halley, Winkler County: Skelly 45 Halley, elev. 2,769 ft., 476 bbl., 5/8-in. choke, 265-qt. shot 2,747-2,882 ft.

Harper, Ector County: Forest Dev. Co. 7-A Moss, elev. 2,924 ft., 318 bbl., 429-qt. shot 4,070-4,213 ft.

Hendrick, Winkler County: Bates-Reading Oil Co. 6 McCabe, elev. 2,820 ft., 236 bbl., 3 per cent water, ¾-in. choke, 380-qt. shot 2,825-2,995 ft., T.D. 3,005 ft.

Gulf 197 O'Brien, elev. 2,711 ft., 682 bbl., pay 2,702-2,945 ft.

Stanolind and Westbrook 3-T-88-G Hendrick, elev. 2,812 ft., 59 bbl., ¼-in. choke, 225-qt. shot 2,907-90 ft., T.D. 3,000 ft.

Kermit, Winkler County: Gulf 26 Clapp, elev. 2,855 ft., 8 bbl., pumping, 450-qt. shot 2,850-3,100 ft., old well drilled deeper.

Keystone (Colby sand), Winkler County: Standard 61-18 Baird, elev. 2,918 ft., 308 bbl., 380-qt. shot 3,191-3,343 ft., T.D. 3,351 ft.

Standard 41-19 Baird, elev. 2,921 ft., 196 bbl., 290-qt. shot 3,280-3,390 ft., T.D. 3,396 ft.

Keystone (lime), Winkler County: S. W. Richardson 7 Jenkins-Continental, elev. 2,960 ft., 322 bbl., 510-qt. shot 3,312-3,470 ft., T.D. 3,496 ft.

R. W. Richardson 4 Jenkins-Southland, elev. 2,961 ft., 223 bbl., 1-in. choke, 380-qt. shot 3,311-3,461 ft., T.D. 3,491 ft.

Richardson Oil Co. 2-A B. F. Jenkins, elev. 2,976 ft., 280 bbl., 1-in. choke, 350-qt shot 3,346-3,455 ft., T.D. 3,460 ft.

Lehn, Pecos County: C-K Drilling Co. 4 Masterson-Lehn, elev. 2,446 ft., dry at 1,747 ft.

McCamey, Upton County: Shell 16 Baker, elev. 2,592 ft., 82 bbl. oil and 27 bbl. water, pumping, 10,000 gal. acid 2,203-41 ft., T.D. 2,267 ft.

McElroy, Upton County: Gulf 262 McElroy, elev. 2,513 ft., 2,392 bbl., 730-qt. shot 2,680-2,840 ft., T.D. 2,850 ft.

North Cowden, Ector County: Stanolind 4-F Smith, elev. 3,030 ft., 59 bbl. oil and 53 bbl. water, pumping, 515-qt. shot 4,170-4,376 ft., T.D. 4,396 ft.

Sand Hills (Ordovician), Crane County: Gulf 8 Tubb, elev. 2,536 ft., 441 bbl., 18 per cent water, top Ellenburger 5,749 ft., 5,000 gal. acid 5,760-64 ft., old well drilled deeper.

Taylor Link, Pecos County: L. D. Lancaster 2-A University, elev. 2,662 ft., 15 bbl. oil and 30 bbl. water, 60-qt. shot 1,700-24 ft., T.D. 1,732 ft.

Waddell, Crane County: Gulf 49 Waddell, elev. 2,769 ft., 10,520 bbl., 5,000 gal. acid 3,280-3,499 ft.

Gulf 32 Waddell, elev. 2,461 ft., 629 bbl., top Ellenburger 5,556 ft., 5,000 gal. acid 5,642-56 ft.

Walker, Pecos County: Cardinal Oil Co. 3-C White & Baker, elev. 2,732 ft., 2,360,000 cu. ft. gas, pay 1,660-1,734 ft.

Cheyenne Petroleum Co. 2-A White & Baker, elev 3,057 ft., dry at 2,166 ft.

TEXAS PANHANDLE COMPLETIONS

Fields

Carson County: Continental 2-E Burnett, Sec. 117, Blk. 4, I.&G.N. Sur., 324 bbl., pay 3,177-3,244 ft

Gulf 13 Block, Sec. 111, Blk. 4, I.&G.N. Sur., 103 bbl., pumping, 450-qt. shot 3,027-3,151 ft., T.D 3,156 ft.

Skelly 143 Schafer, Sec. 197, Blk. 3, I.&G.N. Sur., 283 bbl., pumping, 450-qt. shot 3,015-3,100 ft.

Gray County: Cities Service 2 George, Sec. 151, Blk. 2 I.&G.N. Sur., 167 bbl., pumping, 200-qt. shot 3,170-3,251 ft.

Drilling & Exploration Co. 10 Leopold, Sec. 141, Blk. 3, I.&G.N. Sur., 191 bbl., pumping, 180-qt shot 3,300-12 ft.

R. B. Pringle 15 North Volmert, Sec. 140, Blk. 3 I.&G.N. Sur., 260 bbl., 140-qt. shot 3,238-81 ft.

Stanolind 2-B Lovett, Sec. 36, Blk. B-2, H.&G.N Sur., 288 bbl., pumping, 285-qt. shot 2,920-3,015 ft., T.D. 3,017 ft.

(Continued on Page 85)

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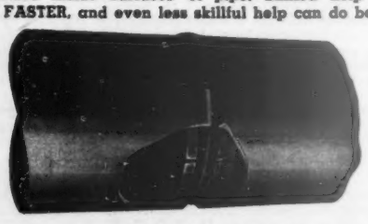

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SOUTHWEST TEXAS

Alice Field Deep Test Blows Gas From Lower Yegua Sand

By F. L. SINGLETON

CORPUS CHRISTI, Tex. — Operators holding acreage in the Alice field, Jim Wells County, centered their attention on Southern Minerals Corp. 2 Stillwell which was shut in after an attempted blowout at a total depth of 7,767 ft. The blowout occurred while the crew was washing to bottom with 15-lb. mud in the hole. While circulating and mixing mud the drill stem stuck at 7,705 ft. The drill stem was then cemented inside of the 7-in. set at 6,434 ft., and the well was opened through a ¼-in. choke and working pressure rose to 3,200 lb. at which time the chokes began to cut out and the well was closed in with 4,500 lb. working presure.

In view of the fact that it was impossible to get an electrical survey to the bottom of the hole due to heaving shale, it was not known at what depth the gas pressure was encountered, but it was believed to be from the lower Yegua formation below 7,300 ft. The well is located in the Spring Creek Irrigation Co. Survey, and is the deepest test ever drilled below the main Vicksburg pay at 5,200 ft.

Carrizo Sand at Caesar:

One mile south of the Caesar field, Bee County, T. B. Slick, Jr., et al 1 Grissom was bottomed in the Wilcox at 7,509 ft., and the casing was perforated for a production test in the Carrizo sand at 6,552-56 ft., where the well was to be completed as a gas-distillate producer. The Mount Selman was topped at 4,960 ft., Cyclamina at 5,597 ft., and the Carrizo at 6,443 ft. The sand section was topped at 6,523 ft., and cored to 6,555 ft.

This well was attracting attention due to its structural position in relation to other Carrizo-Wilcox tests drilled in this area. It is several miles updip from the West Tuleta field where two wells have been completed as gas-distillate producers in the Carrizo sand below 7,500 ft.

Stratton Extended

An extension of 1,800 ft. south was recorded for the Stratton section of the Agua Dulce-Stratton field as Humble 7 King Ranch flowed at the rate of 116 bbl. daily through a ⅛-in. choke from the regular field pay bottomed at 6,643 ft. Development along this trend continues to gain momentum, and at a recent date approximately 22 operations were reported most of which is centered on the west flank of the structure where recent extensions opened additional acreage.

New Pool Leads Laredo District Exploration

A new shallow area was opened in Duval County with the completion of Henderson Coquat 1 Lopez, a wildcat located 7 miles northeast of the town of Bruni in Duval County which is pumping at the daily rate of 14 bbl. from the Cole sand at 1,698-1,704 ft. In the west extension area of the Government Wells field, Sun 77-A Weiderkehr, north of the company's 75-A Weiderkehr, recently completed to open Yegua sand production below 2,900 ft., is plugging back to 1,818 ft. preparatory to testing sand. This sand is being tested after the Yegua sand showed gas.

In Webb County, about 6 miles southeast of Mirando City, O. W. Killam was preparing to test 1 Marrs McLean, located in Survey 610. This well was drilled to a total depth of 4,016 ft., and 5½-in. casing was cemented at 3,318 ft., preparatory to testing sand at 3,240-48 ft. where sidewall cores recovered sand with a good oil odor.

The Chaparosa gas field, Jim Hogg County, received its first crude production with the completion of Adams, Neuhaus & Lucky 1 East, about 1½ miles south of the discovery well which is reported to be flowing at the rate of 102 bbl. of oil daily through a ¼-in. choke from the Pettus sand at 3,466-70 ft.

In the same county and located 4,500 ft. northeast of the Colorado field, Sun Oil Co. was running casing in 1-B East, after a 15-minute drill-stem test in the Pettus sand at 2,902-09 ft. recovered several hundred feet of pipe-line oil. Total depth of the well is 2,911 ft. The recovery of pipe-line oil at this depth comes as a surprise as the well is structurally lower than wells in the field proper which produce mainly from the Pettus sand just below 2,800 ft. Whether production in this direction will be joined with that of the field proper will have to be determined by further development.

New Wildcats

New wildcat activity reported for the Laredo district include the following tests:

Hidalgo County: Baldridge & King 1 M. De Chapa, 5,000-ft. test east of the Nichols field in Porcion 74.

Live Oak County: Yegua Oil Co. 1 Joseph Shipp, 5,300-ft. test in the P. Salinas Survey.

Webb County: H. M. Amsler 1 S. Benavides, 8 miles north of Bruni, Survey 692.

Zapata County: V. G. Schimmel 1 F. Cuellar, 2,500-ft. test in Survey 119, and Henshaw Brothers 1 Ramirez, Block 19, Porcion 18.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT
Fields

Agua Dulce, Nueces County: S. E. W. Oil Corp. 2-B Pfluger, 165 bbl., ⅛-in. choke, perf. casing 7,166-75½ ft., T.D. 7,222 ft.

Stanolind 5 Weinert, dry, T.D. 8,510 ft.

Ben Bolt, Jim Wells County: H. H. Howell 2-A Lindsey & Reed, 240 bbl., 1/16-in. choke, per. casing 5,229-39 ft., T.D. 5,243 ft.

East Flour Bluff, Nueces County: 110 bbl., ⅛-in. choke, T.D. 6,795 ft.

East Placedo, Victoria County: W. L. Goldston 2 West, 84 bbl., 5/64-in. choke, perf. casing 6,868-70 ft., T.D. 6,937 ft.

La Gloria, Brooks County: La Gloria Operators 2 South La Gloria Unit, 280 bbl., open flow, perf. casing 5,888-6,795 ft., T.D. 6,950 ft.

McFaddin, Victoria County: Barnsdall 18 McFaddin, old well, 218 bbl., ¼-in. choke, perf. casing 5,731-35 ft., T.D. 6,641 ft.

Odem, San Patricio County: Wellington 2 Lane, 121 bbl., ⅛-in. choke, perf. casing 5,326-29 ft., T.D. 5,455 ft.

Refugio, Refugio County: Sunray 4 Mitchell, dry, T.D. 7,794 ft.

Richard King, Nueces County: Southern Minerals Corp. 23-B King, 70 bbl., 7/64-in. choke, perf. casing 5,648-53 ft., T.D. 5,655 ft.

Seeligson, Jim Wells County: Transwestern 8 Dunlap, 96 bbl., 3/32-in. choke, perf. casing 6,105-10 ft., T.D. 6,250 ft.

Stratton, Nueces County: Chicago Corp. 24 Wardner, 760 bbl., open flow, perf. casing 6,420-6,622 ft., T.D. 6,780 ft.

Sam E. Wilson and Gulf Plains Corp. 3 Rivers, 157 bbl., ¼-in. choke, perf. casing 5,707-23 ft., T.D. 6,909 ft.

Humble 9 King ranch, 110 bbl., 1/9-in. choke, T.D. 6,649 ft.

Sam E. Wilson and Gulf Plains Corp. 1-C San Antonio Join Stock Land Bank, 165 bbl., ⅛-in. choke, perf. casing 6,447-54½ ft., T.D. 6,600 ft.

(Continued on Page 81)

LOUISIANA GULF COAST

Bay De Cherre Wildcat Finds Salt; New Sand at West Bay

By F. L. SINGLETON

NEW ORLEANS, La.—The Bay De Cherre structure in La Fourche Parish, on which dry gas production was opened in November of last year, was proven a salt dome structure with the drilling of Texas 1-B La Fourche Basin Levee District. The well, abandoned in salt at 8,680 ft., topped the formation at 8,634 ft. It is in 29-19s-24e, north of the discovery well, which was drilled to a total depth of 11,495 ft., plugged back and completed as a gasser at intervals from 2,460-2,528 ft.

In the West Bay field, Plaquemines Parish, Gulf 6-E Buras Levee District, which proved this structure a salt dome the previous week, was due to open production from a deeper sand as an electrical survey showed favorable indications in sands below the main 7,300-ft. pay. These sands were logged at 9,046-61 ft., 9,177-83 ft., 9,600-9,709 ft., and at 9,830-57 ft. Salt was topped at 10,005 ft.

New Sands, New Fields

Atlantic 1 Hawkins, located on the east side of the Neale field, Beauregard Parish, recovered wash water, mud and a little gas when tested at 12,493-12,533 ft. in new Wilcox sand and the company was retesting through perforated casing at 12,284-12,312 ft. . . . On the Thornwell prospect, Jefferson Davis Parish, Cities Service Oil Co. was to test 1 Lacassine Co., 36-11s-5w, which is expected to open another gas-distillate area. Five-inch liner was cemented on bottom at 10,325 ft., and the well is to be tested through perforated casing at 10,312-25 ft. . . . A new sand found on the southwest flank of the Port Barre dome, St. Landry Parish, paid off with a good producer as Pan American 12 Garland flowed 272 bbl. daily through a 10/64-in. choke after perforating casing at 6,638-60 ft. . . . An extension to the Port Allen field, West Baton Rouge Parish, was in the making as Amerada Petroleum Corp. prepared to test 5 Wilberts through perforated casing at 9,600-04 ft. Another sand was recorded by an electrical survey at 9,596-9,600 ft. Total depth is 9,778 ft. . . . On the northwest flank of the Starks dome, Calcasieu Parish, W. T. Burton 4 Lutcher-Moore was bottomed at 6,376 ft. with 5½-in. casing cemented for testing after a drill-stem test recovered pipe-line oil and tested 95 lb. working pressure. . . . S. W. Richardson, an important south outpost test in the Iowa field, Calcasieu and Jefferson Davis parishes, was reported to be flowing a small amount of oil and an unestimated large volume of gas while testing through perforated casing at 7,417-21 ft. Tubing pressure was 2,925 lb., and casing pressure 2,550 lb.

No New Wells Started

Drilling operations in South Louisiana was showing a slight decline. Only a few scattered wildcats were drilling, and no new activity was reported during the week.

LOUISIANA GULF COAST COMPLETIONS

Wildcats

St. Martin Parish: Amerada 1 St. Martin Land Co., dry, T.D. 12,501 ft.

La Fourche Parish: Texas 1-B La Fourche Basin Levee district, top salt 8,634 ft., T.D. 8,680 ft., salt.

Fields

Bayou Blue, Iberville Parish: Superior 19 Schwing Lumber & Shingle Co., 130 bbl., ⅛-in. choke, T.D. 6,039 ft., P.B. T.D. 5,054 ft.

Bayou Sale, St. Mary Parish: Humble 1 Miami Corp., 195 bbl., ⅛-in. choke, perf. casing 10,143-53 ft., T.D. 11,600 ft.

Belle Isle, St. Mary Parish: Sun 6 State, top salt 533 ft., T.D. 544 ft.

Cameron Meadows, Cameron Parish: Magnolia 37 Cameron Meadows, dry, T.D. 1,397 ft.

Burton-Sutton 27 Cameron Parish School Board, dry, T.D. 6,870 ft.

Chacahoula, La Fourche Parish: Sun 6 Cypress, 158 bbl., 10/64-in. choke, T.D. 8,310 ft., P.B. T.D. 7,890 ft.

Fausse Point, Iberia Parish: Sun 10 Planters Lumber Co., dry, T.D. 8,144 ft.

Garden Island, Texas 56 State, 202 bbl., ¼-in. choke, perf. casing 5,515-58 ft., T.D. 8,188 ft.

Golden Meadow, La Fourche Parish: Texas 16 State Catfish Lake, 65 bbl., 10/64-in. choke, T.D. 2,802 ft., P.B. T.D. 2,650 ft.

Iowa, Calcasieu Parish: Shell 9 Fontenot, 299 bbl., 9/64-in. choke, perf. casing 8,192-8,212 ft., T.D. 8,250 ft.

New Iberia, Iberia Parish: William Helis 11 Bullock, 270 bbl., 12/64-in. choke, perf. casing 6,226-60 ft., T.D. 6,401 ft.

William Helis 12 Schwing, dry, T.D. 5,695 ft.

Texas 8 Bryant, 195 bbl., 10/64-in. choke, perf. casing 6,040-80 ft., T.D. 8,518 ft.

Port Barre, St. Landry Parish: Bering 1 Perkins & Cormier, top salt 5,215 ft., dry, T.D. 5,228 ft.

Pan American 12 Garland, 272 bbl., 10/64-in. choke, perf. casing 6,638-60 ft., T.D. 6,962 ft.

University, East Baton Rouge Parish: William Helis 12 Nelson, 194 bbl., ⅛-in. choke, perf. casing 9,567-72 ft., T.D. 10,017 ft.

Ville Platte, Evangeline Parish: Continental 11 W. L. Tate, 312 bbl., 12/64-in. choke, perf. casing 10,028-40 ft., T.D. 10,049 ft.

Vinton, Calcasieu Parish: Sutton Joint Interest 3 Calcasieu National Bank, dry, T.D. 5,739 ft.

Union Sulphur 3 Gray, 62 bbl., 10/64-in. choke, perf. casing 3,497-3,550 ft., T.D. 4,511 ft.

West Hackberry, Cameron Parish: Stanolind 32 Gulf Land, 187 bbl., ¼-in. choke, perf. casing 9,594-9,624 ft., T.D. 10,191 ft.

Southwest Texas Fields

(Continued from Page 80)

Southern Minerals Corp. 33 Community, 78 bbl., 7/64-in. choke, perf. casing 6,440-56 ft., T.D. 6,695 ft.

LAREDO DISTRICT

Wildcats

Jim Hogg County: J. F. Fouch 1 Palacious, dry, T.D. 3,502 ft.

Live Oak County: J. H. Durbin 3 Davidson, dry, T.D. 1,090 ft.

Starr County: Sun 2 Jones, dry, T.D. 4,373 ft.

Webb County: W. C. McBride 1 J. O. Walker, dry, T.D. 3,263 ft.

Fields

East Benavides, Duval County: Hiawatha Oil & Gas Co. 3-A Parr, 50,000,000 cu. ft. gas, open flow, perf. casing 5,715-25 ft., T.D. 5,817 ft.

Colorado, Jim Hogg County: Humble 51-B King, 168 bbl., ⅝-in. choke, T.D. 2,895 ft.

Hordes Creek, Goliad County: Brown & Wheeler 3-C Kaufman, small gas well, no gage, perf. casing 1,994-2,004 ft., T.D. 5,009 ft.

Killam, Webb County: Anderson & Killam 2 Laurel, 1,000,000 cu. ft. gas, ¼-in. choke, sand 2,031-55 ft.

Las Animas, Jim Hogg County: Sollars Royalty Co. 10 McLean, 15 bbl. oil and 45 bbl. salt water, ⅜-in. choke, perf. casing 1,798-1,805 ft., T.D. 1,815 ft.

Lopeno, Zapata County: Wellington 1 Ramirez, 17,000,000 cu. ft. gas open flow, perf. casing 2,494-2,556 ft., T.D. 2,615 ft.

Sun, Starr County: Humble 1 Block, 77 bbl., 1/4-in. choke, T.D. 4,709 ft.

SOUTH CENTRAL TEXAS DISTRICT

Wildcats

Guadalupe County: J. H. Foster 1 Maierhoffer, top chalk 2,003 ft., base chalk 2,137 ft., Buda lime 2,141 ft., Del Rio lime 2,200 ft., top Georgetown lime 2,266 ft., top Edwards lime 2,297 ft., dry, T.D. 2,318 ft.

Fields

Chicon Lake, Medina County: Charles Wagener 5-C Medina Irrigation, 4 bbl., pumping, producing from crevice in Midway 135-40 ft.

Charles Wagener 2-C Medina Irrigation Co., 2 bbl. pumping, producing from crevice in Midway 131-38 ft.

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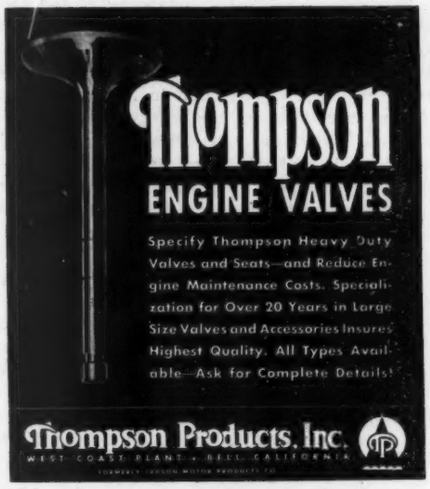
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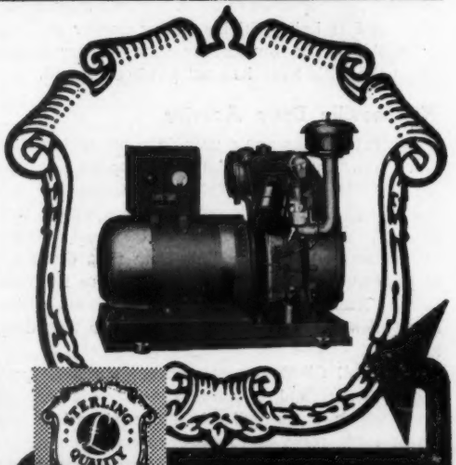
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Deep Lisbon Well Blows Out From Unsuspected Gas Zone

By R. MARNE SANFORD

SHREVEPORT, La.—After having set a new depth record for North Louisiana, a deep wildcat exploratory test went further, the past week, and upset predictions by encountering a gas blowout at the 11,880-ft. level. The well is Union Producing Co. 1 McDonald, 13-21n-4w, in the Lisbon area of Claiborne Parish.

The wildcat is 8,200 ft. southwest of the same company's 1-A Meadows, 18-21n-4w, which was completed early in 1941 as a deep Smackover lime distillate and gas producer from the 10,200-ft. level, deepest production in North Louisiana. The new wildcat test has been checking several hundred feet lower, structurally, than the discovery well, and was given little chance of production. The zone from which the gas blowout occurred is unknown as yet, but presumed to be either the Smackover lime or the lower part of the Buckner section.

No. 1 McDonald topped the anhydrite stringer at 3,707 ft., the Massive anhydrite at 3,884 ft., based the Massive anhydrite at 4,097 ft., and topped the Cotton Valley at 7,586 ft. Production is probably from the Buckner and the Smackover series has not yet been encountered.

The blowout was quickly controlled by closing the blowout preventer valve. Mud was blown from the hole but the tools and rig were not damaged. At last reports the well was under control, and reported to be only blowing by heads. The mud is being thickened for deeper drilling, probably to the Smackover lime if correlations show that this zone has not yet been found.

Haynesville Deep Activity

Several months ago a new deep producing horizon from the Pettit lime was opened in the Haynesville field of Claiborne Parish. A few weeks ago Ohio Oil Co. completed a second well from the deep level for a potential exceeding the initial completion. Resulting from this, there are at present some 12 to 15 permits before the Louisiana Conservation Commission's Mineral Division, all seeking the drilling right for this deep horizon.

Blackwell Oil & Gas Co., through a lease purchase in the field, acquired considerable acreage upon which it immediately staked locations for seven tests, most of the operations to be in 22-23n-8w. The Ohio Oil Co. has a considerable number of tentative locations staked in Sections 21, 23, and 14, all in Township 23n-8w. Various independent operators are seeking from one to three permits each for their field acreage. Based on the new priority orders and the materials scarcity, the commission is awaiting all information available before holding a hearing on the field to determine the spacing pattern and the rules governing the drilling.

Catahoula Lake

Carter Oil 1-D Tensas, just south of the shore of Catahoula Lake in La Salle Parish, was officially gaged the past week for one of the most promising of Wilcox discoveries yet made in the district. Located in SE SW 25-6n-3e, the wildcat flowed 144 bbl. of oil with no water through casing perforations from 4,294-4,304 ft. and 4,309-12 ft., two zones. The flow was through 10/64-in. choke under pressures of 500 lb. and 800 lb. on the tubing and casing, respectively. The gas-oil ratio was 450 to 1. Rapid development is expected for the immediate area, and the discovery company already has two tests drilling nearby.

NORTH LOUISIANA COMPLETIONS

Wildcats

Bossier Parish: W. G. Coats 1 Bellevue Land Co., NE SW 27-20n-11w, dry at T.D. 2,924 ft.

Bienville Parish: R. E. Collins 1 Madden, SW SW SE 3-16n-8w, top chalk 1,745 ft., dry at T.D. 2,020 ft.

Catahoula Parish: Placid Oil 2 Grant Tbr. & Mfg. Co., SW NE 29-6n-6e, dry at 6,570 ft., no tops reported.

Caldwell Parish: Southern Carbon 1 Howard, SW SE 13-14n-4e, top Cane River 903 ft., Wilcox 1,112 ft., Midway 2,860 ft., Cretaceous 3,438 ft., dry at T.D. 4,004 ft.

La Salle Parish: Carter Oil 1-D Tensas, SE SW 25-6n-3e, top Vicksburg 1,100 ft., Cockfield 1,470 ft., Cook Mountain 2,060 ft., Sparta 2,200 ft., Cane River 2,850 ft., Wilcox 2,938 ft., oil sand 4,294-4,304 ft. and 4,309-12 ft., Midway 5,738 ft., flowed 144 bbl. oil daily, 10/64-in. choke, T.D. 5,905 ft.

Placid Oil 15-F Goodpine, SW SE 15-8n-4e, top Wilcox at 2,818 ft., dry at T.D. 5,405 ft.

Placid Oil 1-A Urania Lbr. Co., SE SW 17-8n-2e, top Cockfield 663 ft., Cook Mountain 1,120 ft., Sparta 1,277 ft., Cane River 1,812 ft., Wilcox 1,944 ft., Midway 4,421 ft., dry at T.D. 4,472 ft.

Winn Parish: Carter Oil 1 Urania Lbr. Co., SW NE 31-12n-1e, top Cane River 1,088 ft., Wilcox 1,310 ft., Midway 3,270 ft., dry at T.D. 3,435 ft.

Fields

Bellevue, Bossier Parish: C. H. French 6 Scanland, SE SE SE 15-19n-11w, pumped 5 bbl., 406 ft.

Caddo, Caddo Parish: Bayou State Oil 1-B Stiles, SE NW NW 27-21n-16w, pumped 12 bbl., 1,036 ft.

G. M. McClenahan 5 Handschumacher, NW SW 18-21n-15w, abandoned location.

(Continued on Page 83)

Midway Discovery Well May Open Important Field

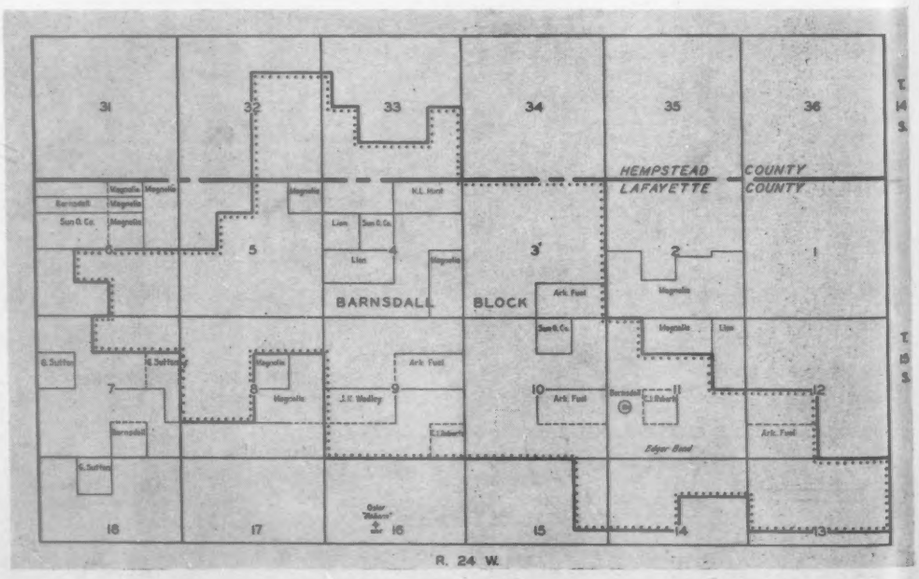
BARNSDALL'S Midway discovery well in the Smackover lime, with an estimated open-flow potential of between 15,000 and 25,000 bbl., has opened what promises to be the best field in recent years in southwestern Arkansas. The well, Barnsdall 1 Edgar Bond, NW SW 11-15s-24w, found the top of the Smackover lime at 6,296 ft., and the porous oolitic section from 6,304-72 ft. Saturation continued below this level and water was encountered at 6,520 ft., the total depth of the hole being 6,536 ft. Seven-inch pipe was run to the bottom of the hole and perforated with 100 shots from 6,340-70 ft. Initial tests showed 85 bbl. an hour through ¼-in. choke and subsequent tests, which have been taken sporadically over the past 2 weeks, show no tendency to decline.

The pool opener is on an elongated anticline of the normal Arkansas type but is located to the north of a graben which was formerly thought to limit production in the Smackover lime. The nearest well and the only other Smackover test north of the graben was E. H. Moore 2 Dale, 24-15s-26w, which found no production in the lime, topped at —7,011 ft. The Barnsdall well, 12 miles east and a little north of 2 Dale, was nearly 1,000 ft. higher as the top of the Smackover was at —6,024 ft.

The principal reason for lack of confidence in the Smackover as a potential producer north of the graben was the fact that wells drilled in the graben found the lime tight. The result of the Barnsdall discovery, however, shows that this condition is only local and will probably lead to deep prospecting on structures over a wide area, extending into northeastern Texas and as far north as the pinchout of the formation beneath later strata.

The oil differs from that found in the Smackover lime fields to the south in that it is a sweet oil of 36-38 gravity and has the low gas-oil ratio of 300 cu. ft. per barrel. Tubing and casing pressures were 860 lb. and 840 lb., respectively.

A hearing on the spacing pattern will be held by the Arkansas Oil and Gas Commission on January 22 and, in the meantime, Barnsdall has filed application for six additional locations, Arkansas Fuel Oil Co. for two, Cap Roberts for one, and three other Shreveport independents for one each. These locations are 2 to 3 miles away.



Plat of Midway field, Lafayette County, Arkansas showing location of Barnsdall block and discovery well

Lime Section Is 100 Ft. Thick In Barron Pool Outpost

By D. H. STORMONT

DALLAS, Tex.—The Barron Pettit lime gas-distillate pool of southwestern Limestone County has been extended one location south and east by a large producer. The extension well is Zephyr Oil Co. 1 Ethyl Barron, Mabry Survey, which was completed for an estimated 20,000,000 to 30,000,000 cu. ft. of gas daily. Production is being derived from the Pettit lime from 5,595-5,695 ft. This section is one of the thickest yet uncovered in the pool.

No. 1 Barron is also making considerable distillate, according to reports. The volume of distillate is not known but it is thought to be larger than that of any other producer in the pool. Production has been turned into the line of the Lone Star Gas Co.

Derrick at 1 Barron is being moved to southern Freestone County where Zephyr Oil Co. has taken over the prospective Woodbine sand wildcat of C. W. Killough at 1 P. D. C. Ball, located in the southwest corner of a 197-acre tract in the M. Rionda Survey, 3 miles northeast of Turlington. The wildcat is contracted to 5,000 ft. and is located on a block of 3,600 acres.

Three Wildcats Staked

East Texas wildcat exploratory play, which has been set back by a series of failures in recent weeks, added three more tests during the week. They were:

Henderson County: Iowa-Payne Oil Co. 1 Weesner, 660 ft. from the S and W lines of a 85½-ac. tract in the Goliker Sur., 3,000 ft. north of the county line, about 2 mi. N of Frankston, a 5,000-ft. Woodbine sand test.

Hopkins County: Donnie Petroleum Co. 1 S. A. Welborn, 467 ft. from the S and W lines of a 56.2-ac. tract in the James Webb Sur., about 1⅛ mi. SE of the Como townsite.

W. B. Hinton 1 Jeff Crisp, 1,320 ft. from the S and 660 ft. from the W lines of a 43.5-ac. lease in the Acquirer Sur., about 1 mi. E of Hinton and Talco Asphalt & Refining Co. 1 Long, Acquirer Sur., which has been abandoned after promising Paluxy sand production.

EAST TEXAS COMPLETIONS

Wildcats

Anderson County: Tex. Harvey 2 M. H. Neal, E. Ewing Sur., 49 bbl. in 24 hr., 6/64-in. choke, T.D. 5,405 ft.

Hopkins County: W. B. Hinton and Talco Asphalt 1 S. M. Long, W. Acquirer Sur., 4,000 ft. from E and 650 ft. from S lines of survey, dry at 4,895 ft., top Paluxy 4,704 ft.

Leon County: Placid Oil Co. 1 J. S. Weekly, C. C. Stealy Sur., 3½ mi. NW Jewett, 1,786 ft. from N and 467 ft. from W lines of survey, 310-acre tract, dry at 5,894 ft., top Austin 4,684 ft.

Navarro County: J. R. Bunn 1 L. C. Cocke, J. White Sur., 1,200 ft. from SW of SW cor. G. A. Rakestraw 120-ac. tract, approximately 7,100 ft. from NW and 1,200 ft. from NE of survey, dry at 3,140 ft., top Austin 2,190 ft., top Woodbine 2,976 ft.

Smith County: Ryan Consolidated 1 D. S. Wright, J. M. Garcia Sur., 1,680 ft. from N and W lines of Edgar Pollett Sur., dry at 5,459 ft., top Austin 4,470 ft.

East Texas Field

(1-hour gage)

Longview, Gregg County: Shell 4 J. R. Williams, McAnally Sur., 60 bbl., top Austin 3,446 ft., pay 3,488-3,548 ft., T.D. 3,578 ft.

Fields

Hawkins, Wood County: Humble 5 G. W. Atkins, J. P. Moseley Sur., 108 bbl. in 6 hr., ¼-in. choke, top Austin 4,322 ft., top Woodbine 4,619 ft., pay 4,757-73 ft., T.D. 4,867 ft.

Humble 4-B L. A. Bryan, M. A. Esparcia Sur., 26 bbl. in 24 hr., pumping, pay 4,946-47 ft.

Humble 3 Ella Faulk, James Pollock Sur., 366 bbl. in 24 hr., ¼-in. choke, pay 4,765-89 ft., T.D. 4,854 ft.

Humble 1-B Tom Jackson, E. Wideman Sur., 96 bbl. in 6 hr., ¼-in. choke, top Austin 4,260 ft., top Woodbine 4,575 ft., pay 4,718-58 ft., T.D. 4,955 ft.

Humble 1-C Tom Jackson, E. Wideman Sur., 85 bbl. in 6 hr., ¼-in. choke, pay 4,771-4,826 ft., T.D. 4,865 ft.

Humble 3-A E. M. Slaughter, G. Brewer Sur., 309 bbl. in 24 hr., ¼-in. choke, top Austin 4,286 ft., top Woodbine 4,494 ft., pay 4,607-4,737 ft.

Humble 1 J. C. Slaughter, J. B. Crain Sur., 124 bbl. in 24 hr., top Austin 4,407 ft., top Woodbine 4,642 ft., pay 4,863-80 ft., T.D. 5,023 ft.

Navarro Oil Co. 3 E. M. Green, J. P. Moseley Sur., 95 bbl. in 24 hr., top Austin 4,414 ft., top Woodbine 4,721 ft., pay 4,878-88 ft.

Sol Simon 1 H. F. Downing, G. Brewer Sur., 105 bbl. in 6 hr., ¼-in. choke, top Woodbine 4,396 ft., pay 4,600-4,800 ft., T.D. 4,828 ft.

Stanolind 6 C. C. Miller, J. P. Moseley Sur., 93 bbl. in 8 hr., ¼-in. choke, top Austin 4,107 ft., top Woodbine 4,320 ft., pay 4,322-4,522 ft., T.D. 4,768 ft.

Long Lake, Anderson County: Hunt Oil Co. 1 A. W. Johnson, S. Sanches Sur., 70 bbl. in 24 hr., 7/64-in. choke, top Austin 4,767 ft., pay 5,287-5,301 ft.

Long Lake Production Co. 1 B. L. Chastain, John Adams Sur., 116 bbl. in 24 hr., ⅛-in. choke, T.D. 5,352 ft.

West Central Texas Fields

(Continued from Page 75)

Marble Falls lime. The lime, at 4,115-16 ft., carried 1 ft. of saturated sand with gas volume of 2,000,000 cu. ft. daily. Operator then decided to deepen to Ellenburger lime at 4,367 ft. but this section carried water. The test was then plugged back to 2,950 ft. for completion attempts in the Strawn.

No. 2-A Elliott is located in the C SE SW Section 9, L.A.L. Survey. Site is about ¼ mile west of the same operator's 1-A Elliott, which was completed in the Strawn section at 2,845 ft. as a 6,900,000-cu. ft. wet gas producer.

Four New Wildcats

Wildcat exploratory play in West Central Texas continued unabated during the week in spite of the unfavorable weather. Four new tests were staked:

Shackelford County: Ed C. Lawson 1 J. H. Reve, on a 171-acre lease in the NE½ of Sec. 14, Blk. 3, H.&T.C. Sur., 1¼ mi. NE of the Ivy pool, a 2,500-ft. test.

Jones County: Hendrickson-Miller 1 J. C. Huddleston, NW cor. of a 126.8-ac. tract in Sec. 2, Blk. 20, Henry Millard Sur., about 3 mi. SE of Hawley, a 2,500-ft. test.

Brown County: Ralph D. Herring 1 J. S. Williams, 150 ft. from the N and W lines of a 40-ac. lease in Sec. 40, H.T.&B. Sur.

Comanche County: L. B. Tannehill 1 Terrill, 300 varas from the E and 400 varas from the N line of his lease. Site is about 2½ miles south of Comyn.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Callahan County: Ramhick Oil Co. 1 Ace Hickman, 200 ft. from N and 150 ft. from E of SE¼ of J. W. Jones Sur., dry at 498 ft.

Wm. P. Austin 1-A I. N. Jackson, Sec. 20, E.T. Sur., dry at 1,280 ft.

Coleman County: Merry Bros. & Perini 1 C. M. Greer, Lot 2, Hiram Kegans Sur. 520, 152 bbl. in 11 hr., 1-in. choke, est. 300 bbl. with 3,500,000 cu. ft. gas, pay 3,903-35 ft., T.D. 3,937 ft.

Jones County: J. B. Cunningham 1 J. B. Freeman, Alex. Glenn Sur. 264, dry at 2,824 ft.

Humble 6 C. H. Graves, semiwildcat, Sec. 41, T.&P. Sur., Blk. 18, 13 bbl. in 24 hr., pumping, 6,000 gal. acid 2,323-26 ft., T.D. 3,000 ft.

Shackelford County: J. B. Young 2 R. A. Elliott, Sec. 45, B.O.A. Sur., dry at 701 ft.

Stephens County: Daniel & Pardue 1 W. A. Corbett, Sec. 11, S.P. Sur., Blk. 2, dry at 3,367 ft., top Caddo 3,300 ft.

Stonewall County: Forest Dev. Co. 2 C. E. Boyd, semiwildcat, Sec. 45, H.&T.C. Sur., Blk. D, dry at 4,753 ft.

Fields

Amity, Comanche County: L. H. Choate 6 T. A. Smith, Lot 3, Sec. 34, Lampasas C.S.L. Sur. A-608, 25 bbl. oil and 10 per cent water in 24 hr., pumping, 30-qt. shot 602-30 ft., T.D. 633 ft.

Cook, Shackelford County: Roeser & Pendleton and Continental 8-A-117 W. I. Cook, Sec. 117, E.T. Sur., 65 bbl. in 24 hr., pumping, pay 1,695-1,701 ft.

McCaulley, Fisher County: Bell Oil Co. 2 A. M. Eivens, Sec. 51, H.T.&B. Sur., Blk. 1, 123 bbl. in 24 hr., pumping, pay 3,283-90 ft.

Bell Oil Co. 1 A. M. Eivens, Sec. 51, H.T.&B. Sur., Blk. 1, 45 bbl in 24 hr., pumping, 4,000 gal. acid 3,319-26 ft.

Novice, Coleman County: States Oil Corp. 2 O. B. Featherston, M. J. Goble Sur. 118, dry at 3,755 ft., top Caddo 3,681 ft.

Shackelford, Shackelford County: Green & Huggerty 1 J. H. Elliott, Sec. 11, L.A.L. Sur., dry at 854 ft.

Ungren & Frazier 6-A J. F. Dyer, Sec. 86, T.&P. Sur., Blk. 12, dry at 1,312 ft.

Stroud, Stephens County: T. G. Shaw 2 S. B. Stroud, Green Newton Sur. A-128, 42 bbl. in 24 hr., pay 3,055-65 ft., old well drilled deeper.

Wimberly, Jones County: Hedrick Oil Co. 2-B Sara T. Mormison, Guadalupe Martinez Sur. 127, 172 bbl. in 8 hr., est. 350 bbl., pay 2,198-2,221 ft.

Butler & Horne Drlg. Co. 1-A A. M. Wimberly, Lot 106, Godwin subd. of De Witt C.S.L. Sur. 126, 151 bbl. in 24 hr., 3,000 gal. acid 2,528-42 ft., T.D. 2,616 ft.

North Louisiana-Arkansas

(Continued from Page 82)

Converse, Sabine Parish: A. R. Chestnut 2 DeSoto Corp., SE NE 27-10n-13w, pumped 25 bbl. oil, 1,962 ft.

Nebo, La Salle Parish: Patrick & Lyrrell 1 Coon-Cannon, irregular Sec. 41-7n-3e, 73 bbl. oil and 4 bbl. water, perf. casing 3,954-63 ft. and 3,968-75 ft., T.D. 4,062 ft.

Berkshire Oil 1-A Ward, NW cor. Lot 1, irregular Sec. 40-7n-3e, 282 bbl., perf. casing 3,985-88 ft., 4,008 ft., T.D.

H. L. Hunt 40-A Goodpine, SW SE 16-7n-3e, 171 bbl. oil and 39 bbl. water, perf. casing 4,030-36 ft., 4,105 ft., T.D.

Patrick & Lyrrell 2 Goodpine, NW SW 21-7n-3e, 129 bbl., perf. casing 3,990-4,023 ft., 4,166 ft., T.D.

Placid Oil 1 Parker unit, NW NW 28-8n-3e, dry at T.D. 3,855 ft.

Sinclair Prairie 1 Stapleton, Lot 9, irregular Sec. 40-7n-3e, dry at T.D. 4,122 ft.

Olla, La Salle Parish: R. J. B. Abshire 1 Urania Lbr. Co., NW SW 10-10n-2e, dry at T.D. 2,570 ft.

Trout Creek, La Salle Parish: H. L. Hunt 22-F Goodpine, SE SW 25-8n-2e, dry at T.D. 3,792 ft.

Second Mount Holly Test

Considered one of the major Smackover lime discoveries of the last half of 1941 was the Mount Holly field in Union County opened by Atlantic Refining Co. The past week the firm's second operation in the area, No. 1-B Davis, SW SW 10-17-18, an offset to the discovery, found salt water and was preparing to plug back. Casing was landed about 100 ft. lower structurally in the second well, and when perforated only salt water appeared. The zone was from 7,179-81 ft. It will be squeezed and reperforated at a higher level. Some 21 ft. of pay sand is credited to the second well, however, this may be at a lower level structurally than the discovery section, and will not yield as prolifically as in the discovery.

ARKANSAS COMPLETIONS

Macedonia, Columbia County: McAlester Fuel Oil 1 Nipper unit, C N½ SW 16-18s-21w, 480 bbl. distillate and 4,800,000 cu. ft. gas, perf. casing 8,942-47 ft., 8,964 ft., total depth.

Smackover, Ouachita County: W. E. Corley 6 Myar, SW NE NE 32-15s-16w, 52 bbl. oil and 1 bbl. water, 2,506-14 ft., 2,547 ft., total depth.

Gulf 10 Fincher, NE NW 33-15s-16w, abandoned location.

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MICHIGAN OPERATIONS

Pool Allowables Are Raised To Keep Production Steady

By OTTO C. PRESSPRICH

SAGINAW, Mich.—Because production was failing to meet demand, the new oil proration restrictions in Michigan were relaxed twice within the week. P. J. Hoffmaster, state supervisor of wells, announced lifting of the per-well limit in Roscommon County's Headquarters field from 200 to 250 bbl. per day, while the Osceola County Reed City pool withdrawal per well was increased from 125 bbl. to 175 bbl. The action was expected to increase Michigan crude production to around 49,000 bbl. per day, even though the federal petroleum office requested that the figure be held to 47,000 bbl.

Mr. Hoffmaster explained:

"We established pretty well that there was a shortage of about 5,900 bbl. per day. The federal 40-acre drilling unit rule and extreme cold weather restricted production more than we anticipated."

Originally, to comply with the federal proposals, Reed City, Headquarters and Winterfield-Clare wells were prorated downward to 125 bbl. a day, effective January 1. That resulted in protests from some refiners that they were unable to get enough crude to operate their plants at capacity.

Although it has been expected that war-time regulation might curtail Michigan activities, oil operators last Thursday and Friday displayed great interest in an auction of oil and gas lease rights on state-owned lands. About 70,000 acres were put on the block and nearly all of it was leased. Although neither county has had production, interest was keenest in Crawford and Kalkaska counties. In Beaver Creek Township, Crawford County, leases were snapped up on 13,680 acres for bonuses ranging from $1 to $2 an acre. About 18,000 acres were leased in Kalkaska County.

Two Discoveries

In Lincoln Township, Clare County, Seba Oil & Development Co. reported initial production of 250 bbl. a day natural from its 1 Oxendale farm, SE NE SE Section 36. Production was from the Dundee at 3,941 ft.

A second wildcat success was in Albion Township, Calhoun County, where Continental Oil Co. 1 Turner, NE SE NE Section 15, was completed at 1,609 ft., for 10,500,000 cu. ft. of gas.

MICHIGAN COMPLETIONS

Allegan County, Cheshire Township: Earl H. Gromer 1-A Barnard, NE SE NW 33-1n-14w, wildcat, dry in Traverse lime, T.D. 1,250 ft.

Fillmore Township: J. H. Fitchett, trustee, 1 Vanden Belt, SE NW NE 10-4n-15w, wildcat, dry, T.D. 1,635 ft.

Hopkins Township: C. A. Perry-Cross & Gould 4 Shafer, SE NE SW 18-3n-12w, pump and flow 130 bbl. first 10 hr. after acid, T.D. 1,624 ft.

Monterey Township: W. Spencer Cook 1 Brenner, SE SW SE 13-3n-13w, dry, T.D. 1,656 ft.

Overisel Township: Horace T. Barnaby, trustee, 1 Hoffman, NE NW SW 27-4n-14w, dry, T.D. 1,546 ft.

Trowbridge Township: Howard Gruenbauer 1 Hadden, SW NE SE 20-1n-13w, pumping 20 bbl. and salt water, acidized, T.D. 1,375 ft.

Watson Township: Fisher-McCall Oil & Gas, Inc., 1 Henderson, NW NW NW 27-2n-12w, wildcat, dry, T.D. 1,617 ft.

Arenac County, Adams Township: Pure Oil Co. 17-A McTaggart, SE NW SE 22-19n-3e, 2,400 bbl., natural in Dundee, T.D. 2,990 ft.

Bay County, Monitor Township: United Drillers & Producers, Inc., 3 Kircher, NW NE NE 3-14n-4e, flow 200 bbl., acidized, T.D. 2,898 ft.

Calhoun County, Albion Township: Continental Oil Co. 1 Turner, NE SE NE 15-3s-4w, wildcat, 10,500,000 cu. ft. gas, T.D. 1,609 ft.

Cass County, North Porter Township: Sue Stradley Phillips 1 Smith, SE NE NE 29-7s-13w, wildcat, dry, T.D. 933 ft.

Clare County, Lincoln Township: Seba Oil & Development Co. 1 Oxendale farm, SE NE SE 36-18n-5w, wildcat, 250 bbl. natural in Dundee, T.D. 3,941 ft.

Winterfield Township: Taggart Bros. Co. 99 Acker-Bray-Hughes, C NE 30-20n-6w, 3,360,000 cu. ft. gas, T.D. 1,392 ft.

Taggart Bros. Co. 100 Arndt-Tjalsma-Hamer, C NW Sec. 29, 4,740,000 cu. ft. gas, T.D. 1,377 ft.

Nason County, Logan Township: J. F. Campbell and Merrill & Dean 1 Lake-Renn, SW NE SE 21-17n-15w, wildcat, dry, T.D. 1,986 ft.

Montcalm County, Richland Township: Belvidere Oil Co. 1 Deaner, NW SE NW 36-12n-5w, wildcat, dry, T.D. 1,286 ft.

Osceola County, Lincoln Township: Pure Oil Co. 2 Gocha-Hewitt, C S½ SE NW 32-18n-10w, 1,536 bbl., acidized in Dundee, T.D. 3,616 ft.

Ottawa County, Allendale Township: W. S. Temples-E. J. Boos 1 Taylor, NW NW SW 31-7n-14w, wildcat, dry, T.D. 1,684 ft.

Roscommon County, Roscommon Township: American Drilling Co. 1-L State, C S½ NE NE 33-21n-3w, 768 bbl., natural, T.D. 3,350 ft.

Ohio Oil Co. 2-A State, C S½ NE SE Sec. 33, 1,056 bbl., natural, T.D. 3,350 ft.

St. Clair County, Fort Gratiot Township: William J. Morriss 1 Lymburner estate, SW SW SE 18-7n-17e, wildcat, temporarily abandoned, T.D. 760 ft.

Van Buren County, Bloomingdale Township: Fortney & Broughton 3 Reed, NE SE SE 2-1s-14w, 30 bbl. and salt water, acidized, T.D. 1,276 ft.

North Tinsley Deep Zone Is Defined

By R. MARNE SANFORD

JACKSON, Miss., Jan. 12.—The prolific and numerous producing sands found in the north end of the Tinsley field have been defined as the result of a deep failure completed in the area the past week. The test was W. G. Ray and W. C. Woolf 1 J. C. Hester, located 360 ft. north and 660 ft. east of the center of 36-11n-3w, in the north end of the Tinsley field. Although this area has as many as nine different pay zones, this wildcat found no production whatsoever. It topped the Selma at 4,842 ft., Woodruff 5,024-48 ft., Eutaw 5,118 ft., Perry 5,475-94 ft., Stevens 5,561-85 ft., Lammons sand 5,619-98 ft., McGraw zone 5,948-59 ft., and the Tuscaloosa at 5,984 ft. It was quit as a failure at a total depth of 5,991 ft. Tops were not called on the Slick sand and the deep Powell sand. Presumably these zones were not encountered.

Still continuing the search for stray-sand production in the area, a test in the adjoining section west is drilling ahead below the McGraw level and apparently scheduled to explore to new depths. It is Slick-Urschell 17 Slick, 660 ft. west and 1,220 ft. north of the SE cor. of 35-11n-3w. The test had an old total depth of 5,530 ft. and was deepened. It encountered the McGraw sand zone with heavy oil saturation from 5,783-5,811 ft., one of the thickest sections of saturation yet found in the zone, and is still continuing deeper. At last reports it was drilling below 6,025 ft.

New Wildcats

Adams County: R. L. Fisher has taken over the old Rees Oliver block in Township 5n, Range 2w, and plans a 6,500-ft. test to be started by January 18. The block consists of 6,100 acres; exact location has not been picked.

Sunflower County: Ohio Oil Co. 1 Ray, NW NW 36-18n-5w, to be deepened to 6,000 ft. It was first scheduled for abandonment the past week.

Madison County: Carter Oil 1 C. B. Cooper, SE NE 14-11n-3e, 2 miles south of Pickens-Sharpsburg.

MISSISSIPPI COMPLETIONS

Tinsley, Yazoo County: E. C. Johnston 4 Martin, SE N¼ 1-9n-3w, Woodruff 4,849 ft., T.D. 4,865 ft., pumped 27 bbl. hourly.

W. G. Ray and W. C. Woolf 1 J. C. Hester, SW NE 36-11n-3w, top Selma 4,842 ft., Woodruff 5.024 ft., Eutaw 5,118 ft., Perry 5,475-94 ft., Stevens 5,561-85 ft., Tammons 5,619-98 ft., McGraw 5,948-59 ft., Tuscaloosa 5,984 ft., dry at T.D. 5.991 ft.

ALABAMA COMPLETIONS

Wildcat, Lauderdale County, B. Fillingame 1 Mecke, SE 20-1s-10w, T.D. 376 ft., junked and abandoned.

First Madison Well at Turner Valley Deepened

By VICTOR LAURISTON

CHATHAM, Ont.—In North Turner Valley, Model Oils 1, LSD 8, 22-20-3w5, which since 1930 has been producing from the upper lime, bottoming at 5,905 ft., will be carried down approximately 300 ft. through the rest of the upper porous zone into the lower horizon of the lime. Model 1 originally got the Madison at 5,800 ft. and was carried only a short distance into the upper zone. It started as a naphtha producer, but soon changed to light crude, with a top production around 165 bbl. daily. Its present crude allowable is 85 bbl. daily. Model 1, antedating Turner Valley Royalties 1 by nearly 6 years, was actually the first producer to get crude from the Madison, and has already produced more than 560,000 bbl. of naphtha and light crude. Cable tools are being rigged and deepening will start this month.

Monitor Test

In the Monitor area, eastern Alberta, McColl-Frontenac 1, LSD 4, 5-32-4w4, is below 2,420 ft. Location is close to the Saskatchewan boundary, in an area where several earlier tests by other companies failed to reach conclusive depth.

Bruderheim Structure

Art Mewburn and associates of Calgary have secured extensive acreage and are arranging for a wildcat test on the Bruderheim structure, on the C.N.R. line about 30 miles northeast of Edmonton. Location is expected to be in Township 56-22w4, northeast of Fort Saskatchewan, and drilling will start this winter if weather permits.

Taber Oil Test

A new test of the Taber field in southern Alberta will be undertaken by the Noble Drilling Co., sponsored by Calgary and Vancouver interests. Several tests in the Taber area have encountered oil, and the former Plains Petroleum 2, now controlled by Majestic Mines, is pumping about 15 bbl. daily. Noble 1 will drill in a new area in Township 8-17w4, about 7½ miles southwest of Taber.

LEGAL

Department of the Interior, United States Land Office, Cheyenne Wyoming. Notice is hereby given that the oil and gas deposits in the following tracts are offered to the responsible qualified bidder of the highest bonus per acre for leasing, pursuant to the provisions of Section 17 of the act of February 25, 1920 (41 Stat. 437) as amended by the act of August 21, 1935 (49 Stat. 674) at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in this office at 10:00 A.M., on January 22, 1942: South Oregon Basin field—Parcel No. 1, N½ N½ Sec. 5, T. 50 N., R. 100 W., 6th P.M., 161.50 acres; Parcel No. 2, W½ W½ Sec. 33, 160 acres; No. 3, NE¼ Sec. 32, 160 acres; No. 4, SE¼ Sec. 29, 160 acres; No. 5, SW¼ NE¼, S½ NW¼ Sec. 29, 120 acres; No. 6 SE¼ SW¼ Sec. 30, E½ NW¼ Sec. 31, 120 acres, all in T. 51 N., R. 100 W., 6th P.M.; North Oregon Basin Field—Parcel No. 7, SE¼ SE¼ Sec. 7, T. 51 N., R. 100 W., 6th P.M., 40 acres. The successful bidder must deposit on the date of sale with the Register, a certified check on a solvent bank, or cash, for one-fifth of the amount bid by him and file a showing of qualifications to receive a lease required by Section 7 of Circular 1386. The remaining four-fifths of the amount of the bid, together with the annual rental at the rate of $1.00 per acre must be paid, and a $5000 corporate surety bond furnished prior to the issuance of the lease. Bidders are warned against violations of the provisions of Section 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

LEGAL

Oil and Gas Lease. United States Department of Agriculture, Forest Service, Muskegon, Michigan, January 2, 1942. Sealed bids in triplicate will be received until 10:00 A.M. Eastern Standard Time February 9, 1942, and then publicly opened, offering bonus for operating rights in connection with gas and oil leases on land located in the State of Michigan, Allegan County, Clyde Township, T 2 N, R 15 W, Michigan Meridian, Section 25, W½; Section 26, entire; Section 27, NE¼; Section 35, E½ and NW¼; Section 36, N½; N½ S½ NE¼ SE¼; N½ SW; E½ SE SW. Award of lease will be made only to bidder who can show sufficient experience and financial resources and proven citizenship. Interested parties may obtain bid documents, lease forms, and operating regulations from the Forest Supervisor, Forest Service, Muskegon, Michigan.

ROCKY MOUNTAIN AREA

New Structure Is Indicated In Hiawatha District

By T. R. INGRAM

DENVER, Colo.—Most of the wildcats in the Rocky Mountain area were idle the past week on account of weather conditions. Many of those in the more inaccessible districts will not resume until spring. In the producing fields, however, where facilities are available for winter operations, drilling continued about the same as usual. The exception was the Kevin-Sunburst field in northern Montana where 16 out of 17 operations were standing. In Cut Bank, 9 out of 13 were drilling.

There were only four completions, the best being Yale Petroleum 3-A Frisby, an inside well on the north dome of the Oregon Basin field which flowed 465 bbl. in 24 hours from the Embar-Tensleep through an 18/24-in. bean on the tubing. The others were small wells.

The Vermillion Oil Co.-Johnson & Horton 1 Government, a wildcat on the North Hiawatha structure, Sweetwater County, Wyoming, appeared to be running high and was at an interesting depth. At 2,630-52 ft. it had a show of oil in sandy shale and after standing 48 hours, oil rose 500 ft. in the hole. Total depth is 2,660 ft. with about 60 ft. of open hole which will be underreamed to lower the 10¾-in. The well is located 2 miles north and east of same company's 1 Horrocks, which was completed a year ago for 12,000,000 cu. ft. of gas in the Wasatch.

This well now is believed to be on the north flank of East Hiawatha and the drilling well to be on a separate structure. The horizon in which the oil show is reported has not been definitely identified, but if it proves to be the first objective, it is running approximately 100 ft. higher than expected and 200 ft. higher than the Horrocks well. The drilling well had a show of 1,500,000 cu. ft. in a 10-ft. sand at 450 ft., a show for 1,000,000 cu. ft. at 1,530 ft., and a show of oil followed by water in a sand at 2,138-50 ft.

Royalty Oil Offered

The Department of the Interior has called for bids to be opened January 21 on royalty oil from government land in the Cat Creek field, Montana. Present contract, which is held by the Continental Oil Co., expires January 31. Bidders are given the option of bidding on contract for 1, 3 or 5 years. The royalty oil amounted to 7,625 bbl. in 1940 and approximately 8,043 bbl. in first 6 months of 1941.

WYOMING COMPLETIONS

Oregon Basin field, Park County: Yale Petroleum 3-A Frisby, NE SW NE 32-52n-100w, T.D. 3,230 ft., 8¼-in. cemented on top Embar at 3,165 ft., flowed 465 bbl. on 24 hr. through 18/24-in. choke.

MONTANA COMPLETIONS

Kevin-Sunburst field, Toole County: Dakota-Montana Oil 26 Government, CNL NE NW 19-35n-1w, T.D. 1,562 ft., contact 1,559-62 ft., made 6 to 8 bbl. daily natural, then acidized 1,000 gal., averaged 25 bbl. daily on 10-day test on pump.

NORTHWEST NEW MEXICO COMPLETIONS

Hospah field, McKinley County: Petroleum Products 21 Hospah, SE NW 1-17n-9w, T.D. 1,591 ft., P.B. to 1,570 ft. to shut off water and completed in Hospah sand for 25 bbl. first 24 hr.

Petroleum Products 22 Hospah, NE NW 1-17n-9w, T.D. 1,554 ft., completed in Hospah sand for 27 bbl. first 24 hr.

APPALACHIAN FIELDS

Lower Sands to Be Tested In West Virginia Field

PITTSBURGH, Pa. — Interesting news was reported from all districts of the lower eastern fields during the week which included fair producers in Southeast Ohio, a good gas well in Southwest Pennsylvania, and a large oil well in West Virginia. In addition, a new deep test is starting in Tyler County, West Virginia, in territory where the lower sands (lower Devonian and Silurian) are as yet untested. It was being drilled by Benedum & Trees in Meade district, Tyler County, on the Pearl Broadwater farm, and was scheduled for the Oriskany sand or deeper to the Medina unless stopped by shallower production. It is located on the St. Mary's Quad 5 miles south, Lat. 39° 30′ and 1 mile west, Long. 81°. It started at a surface elevation of 885 ft. and is the first deep test in the area. It is about 400 ft. deep, carrying a large hole.

In Poca district, Kanawha County, the Columbian Carbon Co. added another fair producer on the Homer C. Jones farm which is rated good for 350 bbl. a day initial from the Big lime bottomed at 1,699 ft.

WEST VIRGINIA COMPLETIONS

Boone County, Crook district: Cameron Oil & Gas 2 Ross and Virgie Smoot, drilled deeper, 300,000 cu. ft. gas, started 2,146 ft., Berea 2,621-93 ft., brown shale 3,510 ft., T.D. 4,538 ft.

Calhoun County, Washington district: Victor Brannon 1 W. A. Stalnaker, 353,000 cu. ft. gas, Big Injun 2,070-2,155 ft., gas 2,075-85 ft., shot, T.D. 2,160 ft.

Walker Fork Gas 1 J. C. King, 140,000 cu. ft. gas, Big Injun 1,905-55 ft., gas 1,955-68 ft., shot, T.D. 1,983 ft.

Gilmer County, Center district: Carnegie 2 C. S. Fitzpatrick, 133,000 cu. ft. gas, Big Injun 1,630-1,717 ft., T.D. 1,740 ft.

Lewis County, Freemans Creek district: McCall Drilling 1 Lydia Starcher, 15 bbl. oil and 126,000 cu. ft. gas, Injun sand, T.D. 1,784 ft.

Lincoln County, Carroll district: United Fuel 4926 Jane Miller, drilled deeper, 119,000 cu. ft. gas from Berea and 73,000 cu. ft. gas from brown shale, started 1,955 ft., T.D. 3,158 ft.

Washington district: United Carbon 4 Lincoln Mineral, 710,000 cu. ft. gas, Big Injun 1,906-67 ft., T.D. 4,040 ft.

Marshall County, Liberty district: Manufacturers 3626 Rachel and B. Yeater, 210,000 cu. ft. gas, Salt sand, T.D. 2,000 ft.

Putnam County, Curry district: United Fuel 5077 C. H. Wood, 4,927,000 cu. ft. gas before shot, Big lime 1,525-1,653 ft., T.D. 1,653 ft.

Ritchie County, Murphy district: Watson Oil & Gas 2 J. N. Haddox, 7 bbl. oil and 119,000 cu. ft. gas, Dunkard sand 850-85 ft., Injun sand 2,017-77 ft., T.D. 2,077 ft.

Taylor County, Booths Creek district: Pittsburgh & West Virginia Gas Co. 6124 J. L. Ables, dry in all sands, through Big Injun sand, T.D. 1,138 ft.

Upshur County, Meade district: Cumberland & Allegheny 315 West Virginia-Midland, 313,000 cu. ft. gas, Gordon sand 1,949-71 ft., gas 1,956-60 ft., T.D. 2,154 ft.

Wood County, Williams district: Dr. E. C. Hartman 1 R. C. Palmer, 2 bbl., Salt sand, T.D. 1,375 ft.

ORISKANY GAS FIELDS

Jackson County, Ravenswood district: Hays Oil & Gas 1 J. H. Starr, 5,955,000 cu. ft. gas, Corniferous lime 5,012 ft., Oriskany 5,127 ft., shot 5,127-57 ft., T.D. 5,179 ft.

Joe Rubin 1 T. C. Smith, 1,759,000 cu. ft. gas before shot, Corniferous lime 4,886 ft., Oriskany 4,997 ft., T.D. 5,045 ft.

Kanawha County, Poca district: Columbian Carbon 1 J. W. Jones, 1,390,000 cu. ft. gas, Corniferous lime 4,921 ft., Oriskany 5,035 ft., shot 5,070-5,111 ft., R.P. 18 hr. 1,300 lb., T.D. 5,137 ft.

Columbian Carbon Co. 1 D. V. Atkinson, 3,176,000 cu. ft. gas, 1,391,000 cu. ft. gas, Big lime 1,651 ft., acidized with 1,500 gal., gage 3,176,000 cu. ft. gas, R.P. 665 lb. in 1 hr.

Record Size Gas Well Completed in New Field

In Monongahela Township, Greene County, John Conklin et al recorded the largest gas well in the pool which has been developing over the past year. On the Dunham and Watson lease near the Monongahela Hill Cemetery, these operators struck gas in the Injun sand at 1,400 ft. with an initial volume of about 13,000,000 cu. ft. which has since blown down considerably but is still ranked good for several million cubic feet a day.

On Chestnut Ridge in South Union Township, Fayette County, the test of the Greensboro Gas Co. on the Barton estate is being tested in the lime and shows a volume of 1,500,000 cu. ft. of gas a day from the Onondaga chert beds and it has rocked up as high as 3,290 lb. This

Maryland Test Dry

In Maryland, Peoples Natural Gas Co. operators have abandoned the wildcat on the Schartzer (Humberson) farm on the Accident dome in Garrett County after failing to find production in the Oriskany sand. The total depth was 8,163 ft. and no water was struck in the sand.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Kittanning Township: Local Co. 1 G. A. School, 21,000 cu. ft. gas, Bradford sand 3,373-3,422 ft., gas 3,410 ft., T.D. 3,500 ft.

South Bend Township: Louden 1 Thomas Golf, 120,000 cu. ft. gas, Bradford sand 3,240-3,320 ft., gas 3,244 ft., T.D. 3,265 ft.

Wayne Township: Peoples 1 Ed Cagley, 206,000 cu. ft. gas, Tiona sand, T.D. 2,858 ft.

Clarion County, Porter Township: Hanley & Bird 1 P. Bartlett, 86,000 cu. ft. gas, Thirty-foot sand, T.D. 2,681 ft.

Greene County, Center Township: Manufacturers Light & Heat Co. 2 R. H. Ealy, 463,000 cu. ft. gas, Bayard sand gas 3,162 ft. and 3,167-72 ft., T.D. 3,516 ft.

Monongahela Township: Judson Bell et al 4 E. R. Gabler, 800,000 cu. ft. gas, Big Injun 1,325 ft., gas 1,517-27 ft., T.D. 1,547 ft.

Washington County, Deemston Boro: Thomas Myers et al 1 Homer Cummins 848,000 cu. ft. gas, first Salt sand 1,275 ft., T.D. 1,275 ft.

Permian Basin, Panhandle Fields

(Continued from Page 79)

Texas 36 Saunders, Sec. 1, Blk. 1, B.S.&F. Sur., 163 bbl., pumping, 125-qt. shot 2,820-60 ft.

Texas 6-F Taylor, Sec. 37, Blk. B-2, H.&G.N. Sur., 165 bbl., pumping, 400-qt. shot 2,790-2,870 ft., T.D. 2,872 ft.

Hutchinson County: Phillips 90 Cockrell ranch, Sec. 11, Blk. B-3, D.&S.E. Sur., 213 bbl., pumping, 500-qt. shot 2,840-3,039 ft.

Phillips 62 J. A. Whitenburg, Sec. 58, Blk. 46, H.&T.C. Sur., 272 bbl., pumping, 420-qt. shot 2,794-2,904 ft., T.D. 2,910 ft.

Shell 1-C Harvey, Sec. 16, Blk. M-21, T.C. Sur., 182 bbl., pumping, 155-qt. shot 3,029-85 ft.

Moore County: Texoma Natural Gas Co. 21-M Coon, Sec. 107, Blk. 44, H.&T.C. Sur., 12,800,000 cu. ft. gas, pay 2,750-3,035 ft., T.D. 3,175 ft.

Wheeler County: Smith Bros. 1 Binkley & Caine, Sec 35, Blk. 24, H.&G.N. Sur., 22 bbl., pumping, pay 2,490-2,560 ft., T.D. 2,565 ft.

Smith Bros. 16 Harlan, Sec. 49, Blk. 24, H.&G.N. Sur., 20 bbl., pumping, pay 2,460-2,556 ft., T.D. 2,569 ft.

Oklahoma Fields

(Continued from Page 78)

Cities Service 482 Osage, SE SE SE 15-24-9, 685,000 cu. ft. gas, T.D. 2,245 ft.

Phillips 2 Osage, SE NE SW 18-27-8, pumped 114 bbl. in 16 hr., Mississippi lime 2,416 ft., T.D. 2,460 ft.

Bay Oil 4 Osage, NW SE SW 34-29-11, pumped 35 bbl., Wayside 879 ft., T.D. 935 ft.

Tulsa County: Wilson and Bell-Wells Oil 1 McKee, SW NE SW 5-19-20, dry, Bartlesville 1,930 ft., T.D. 1,952 ft.

Chase 1 Mandling, SE NW SE 4-19-14, dry, T.D. 1,345 ft.

Sand Springs Home 1 Walters, NE SW SW 3-21-13, dry, T.D. 2,276 ft.

Summary of Operations, All Fields, December

SUMMARY OF OPERATIONS, ALL FIELDS, DECEMBER

District—	Comp.	Oil	Prod.	Gas	Dry	Completions Under 1,000 ft.	1,000-2,500 ft	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Footage	Drilling
Appalachian	537	390	531	122	25	21	415	89	12	0	1,167,438	602
Ohio	120	31	704	45	44	39	34	46	1	0	312,476	234
Indiana	51	29	4,283	4	18	12	31	8	0	0	80,553	72
E. Kentucky	38	6	43	32	0	10	16	12	0	0	81,884	115
W. Kentucky	27	12	507	1	14	18	8	1	0	0	22,941	40
Michigan	98	55	115,892	13	30	3	45	50	0	0	239,473	162
Illinois	247	169	47,304	1	77	10	56	181	0	0	671,091	363
Kansas	148	91	94,492	11	46	5	47	96	0	0	550,787	260
Nebraska	6	2	480	0	4	0	5	1	0	0	14,710	9
Missouri, Iowa	3	0	0	0	3	2	1	0	0	0	1,952	0
Oklahoma	191	105	36,013	13	73	19	70	81	21	0	600,924	296
North Texas	138	96	11,129	1	41	33	60	38	7	0	374,190	201
W. Central Texas	37	13	1,191	4	20	5	19	11	2	0	108,957	87
N. West Texas	88	84	79,683	0	4	0	4	19	64	1	425,143	161
S. West Texas	72	58	32,001	3	11	2	24	40	6	0	248,219	179
Texas Panhandle	66	54	10,283	6	6	0	5	60	1	0	202,313	70
E. Texas	45	34	9,894	3	8	0	0	38	7	0	236,647	76
E. Texas Border	2	1	100	0	1	0	1	0	1	0	9,948	11
Upper Gulf Coast	72	65	14,018	1	6	0	0	10	62	0	446,102	141
Lower Gulf Coast	48	34	4,292	2	12	0	0	8	40	0	290,634	86
S. Central Texas	24	14	626	1	9	6	13	3	2	0	45,496	53
South Texas	67	42	5,001	2	23	4	14	46	3	0	232,271	77
Southeast New Mexico	15	12	1,423	0	3	3	1	11	0	0	31,422	49
Arkansas	10	4	431	3	3	0	1	4	5	0	50,647	28
North Louisiana	90	47	5,116	10	33	1	24	42	23	0	333,024	96
Louisiana Gulf	58	48	11,683	0	10	1	1	6	28	22	464,997	140
Mississippi	30	24	10,344	0	6	0	0	11	19	0	147,326	25
Alabama	1	0	0	0	1	1	0	0	0	0	270	2
Georgia	0	0	0	0	0	0	0	0	0	0	0	2
Montana	30	13	2,524	11	6	4	13	13	0	0	61,599	72
Wyoming	3	2	446	0	1	0	2	1	0	0	5,627	61
Colorado	3	1	173	0	2	0	0	3	0	0	12,889	39
Utah	0	0	0	0	0	0	0	0	0	0	0	7
Northwest New Mexico	3	1	40	0	2	1	2	0	0	0	3,810	11
California	68	62	45,428	3	3	1	7	26	27	7	393,265	170
Florida	0	0	0	0	0	0	0	0	0	0	0	1
Total December	2,436	1,599	549,753	292	545	201	919	955	331	30	7,569,025	3,998
Total November	2,794	1,900	645,724	309	585	244	1,005	1,106	402	37	8,926,417	4,183
Difference	358	301	95,971	17	40	43	86	151	71	7	1,357,392	185

APPALACHIAN

	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Bradford	*216	216	171	0	0	152
Allegany	*125	125	92	0	0	96
N. Oriskany	3	0	0	2	1	7
Middle Dist.	25	23	36	2	0	11
Butler-Armstrong	7	6	12	0	1	5
S.W. Pa.	44	1	20	38	5	89
W. Virginia	117	19	200	80	18	242
Ttl. Dec.	537	390	531	122	25	602
Ttl. Nov.	557	419	915	113	25	697
Difference	20	29	384	9	0	95

*95 wells in Bradford and 51 in Allegany are input wells.

OHIO

Ashland	7	0	0	1	6	6
Ashtabula	1	0	0	0	1	0
Athens	5	0	0	3	2	7
Coshocton	4	1	82	3	0	4
Cuyahoga	2	0	0	2	0	3
Gallia	2	0	0	2	0	3
Guernsey	2	0	0	0	2	4
Harrison	1	0	0	0	1	2
Holmes	1	0	0	1	0	4
Knox	7	1	100	2	4	18
Licking	7	2	13	2	3	17
Lorain	2	0	0	1	1	4
Lucas	1	0	0	0	1	0
Medina	15	12	60	1	2	10
Meigs	8	1	1	2	5	9
Monroe	7	1	3	5	1	13
Morgan	8	0	0	3	5	8
Muskingum	4	1	15	2	1	22
Noble	7	2	15	4	1	7
Perry	7	4	405	0	3	25
Portage	1	0	0	0	1	0
Stark	4	0	0	3	1	7
Summit	1	0	0	1	0	6
Trumbull	0	0	0	0	0	1
Tuscarawas	1	0	0	1	0	11
Washington	11	6	10	4	1	18
Wayne	4	0	0	2	2	4
Miscel.	0	0	0	0	0	21
Ttl. Dec.	120	31	704	45	44	234
Ttl. Nov.	180	53	1,940	74	53	251
Difference	60	22	1,236	29	9	17

Gas 27,300,000 cu. ft.
Recompletions, 4; input wells, 7.

EASTERN KENTUCKY

Knott	5	0	0	5	0	20
Floyd	9	0	0	9	0	26
Pike	10	0	0	10	0	37
Martin	6	1	15	5	0	14
Lawrence	1	1	5	0	0	0
Powell	4	4	23	0	0	2
Magoffin	1	0	0	1	0	1
Johnson	1	0	0	1	0	9
Clay	1	0	0	1	0	2
Miscel.	0	0	0	0	0	4
Ttl. Dec.	38	6	43	32	0	115
Ttl. Nov.	28	5	42	18	5	102
Difference	10	1	1	14	5	13

WESTERN KENTUCKY

Breckinridge	1	0	0	0	1	1
Daviess	4	3	180	0	1	1
Hancock	3	2	10	0	1	3
Henderson	2	0	0	0	2	3
McLean	1	1	10	0	0	2
Muhlenberg	2	0	0	1	1	0
Ohio	8	2	40	0	6	8
Union	4	2	252	0	2	7
Webster	2	2	15	0	0	0
Miscellaneous	0	0	0	0	0	5
Ttl. Dec.	27	12	507	1	14	40
Ttl. Nov.	30	14	363	2	14	40
Difference	3	2	144	1	0	0

INDIANA

Bufkin, S.	5	4	220	1	0	2
Cannelburg	2	2	17	0	0	1
Griffin	7	6	963	0	1	12
Enterprise	1	0	0	0	1	2
Hatfield	2	2	230	0	0	3
Hazleton	1	0	0	0	1	3
Heusler	4	3	174	0	1	2
Hudsonville	1	0	0	0	1	0
Laconia	1	0	0	0	1	0
Mount Vernon	5	5	1,389	0	0	4
Patoka	1	1	93	0	0	3
Trenton	1	0	0	1	0	5
Veale	1	0	0	0	1	0
Wildcats	18	6	1,197	1	11	22
Miscel.	1	0	0	1	0	13
Ttl. Dec.	51	29	4,283	4	18	72
Ttl. Nov.	49	18	1,199	7	24	80
Difference	2	11	3,084	3	6	8

MICHIGAN

Allegan	13	7	1,179	0	6	23
Arenac	4	3	73	1	0	10
Bay	4	3	475	0	1	6
Berrien	1	0	0	0	1	0
Cass	3	1	15	0	2	5
Clare	3	0	0	3	0	18
Gladwin	4	3	279	0	1	2
Iosco	1	0	0	0	1	0
Isabella	3	0	0	1	2	4
Lake	1	1	880	0	0	5
Mecosta	1	0	0	0	1	1
Midland	1	0	0	0	1	0
Montcalm	2	1	25	0	1	2
Oakland	1	0	0	0	1	1
Osceola	34	22	99,529	8	4	30
Ottawa	2	1	5	0	1	3
Roscommon	7	6	13,136	0	1	10
St. Clair	1	0	0	0	1	1
Tuscola	1	1	50	0	0	4
Van Buren	11	6	246	0	5	11
Miscel.	0	0	0	0	0	26
Ttl. Dec.	98	55	115,892	13	30	162
Ttl. Nov.	108	67	112,675	16	25	170
Difference	10	12	3,217	3	5	8

ILLINOIS

Allendale	1	0	0	0	1	2
Benton	4	3	391	0	1	1
Bone Gap	1	1	82	0	0	0
Calvin	1	1	197	0	0	0
Clay	1	0	0	0	1	0
Clay City	5	1	219	0	4	4
Clay City W.	3	3	3,486	0	0	3
Dale	6	6	2,748	0	0	10
Dix	2	2	191	0	0	2
Dubois	1	1	27	0	0	2
Dundas	7	7	680	0	0	2
E. Centerville	3	3	160	0	0	7
El Dorado	1	1	13	0	0	0
Epworth	1	1	115	0	0	3
Fairman	1	0	0	0	1	0
Griffin	3	3	365	0	0	2
Inman, E.	1	1	44	0	0	3
Irons	2	1	1	0	1	4
Irvington	2	1	32	0	1	0
Johnsonville	26	22	5,470	0	4	35
Lawrence	2	1	35	0	1	1
Louden	11	8	1,124	0	3	7
Mason	1	1	75	0	0	2
Mill Shoals	5	4	524	0	1	11
Mount Carmel	2	2	169	0	0	2
New Harmony	20	18	2,189	0	2	23
New Haven	1	1	10	0	0	0
Noble	2	2	193	0	0	3
N. Benton	1	1	125	0	0	5
N. Boos	5	2	165	0	3	3
Parkersburg	6	5	3,715	0	1	5
Rising Sun	2	2	147	0	0	5
Roland	6	6	1,190	0	0	12
Rural Hill	30	28	13,677	0	2	51
Russellville	3	0	0	1	2	0
Sailor Spgs.	2	1	87	0	1	3
St. Francesville, E.	1	1	109	0	0	1
Ste. Marie	2	2	992	0	0	2
St. Paul	1	1	150	0	0	0
Simms	4	3	758	0	1	11
S. Lawrence	1	1	250	0	0	2
Stokes	2	2	491	0	0	1
Walpole	4	4	576	0	0	2
W. Centralia	1	1	50	0	0	2
Woburn	1	1	20	0	0	1
Woodlawn	8	8	937	0	0	9
Wildcats	51	5	5,325	0	46	87
Miscel.	0	0	0	0	0	32
Ttl. Dec.	247	169	47,304	1	77	363
Ttl. Nov.	332	250	64,491	1	81	388
Difference	85	81	17,187	0	4	25

KANSAS

Ainsworth and N.W.	3	3	6,093	0	0	5
Beaver	1	1	70	0	0	2
Bedford	1	1	3,000	0	0	3
Bemis	4	4	8,754	0	0	4
Bitikofer	1	1	23	0	0	0
Bloomer	2	2	3,812	0	0	3
Blue Hill	1	0	0	0	1	0
Chase	2	2	3,210	0	0	4
Cunningham	3	2	33	1	0	8
N.E. Davidson	1	1	57	0	0	2
Doran	1	0	0	0	1	0
Edwards	1	1	3,000	0	0	0
Eldorado	2	2	34	0	0	5
Friendship	*1	1	400	0	0	0
Geneseo	1	1	2,820	0	0	2
Graber	2	1	481	0	1	0
Greenvale	3	2	1,654	0	1	6
Hall-Gurney	9	8	3,441	0	1	9
Hendrickson	*1	1	217	0	0	0
High Spot	1	0	0	0	1	0
Keesling	1	1	236	0	0	2
Kraft-Prusa	4	4	6,000	0	0	9
Laton	2	1	465	0	1	1
Lindsborg	1	1	759	0	0	0
Lost Springs	4	3	871	0	1	5
McLouth	11	2	117	7	2	18
Medicine Lodge	1	0	0	1	0	1
Morel	1	1	3,000	0	0	0
Ogallah	*1	1	30	0	0	0
Patterson	1	1	461	0	0	1
Pawnee Rock and E.	2	2	667	0	0	2
Peace Creek	6	5	15,000	0	1	6
N.E. Peace Creek	*1	1	3,000	0	0	0
Ray	6	6	11,026	0	0	4
Raymond	2	2	7,297	0	0	2
Rick	3	1	37	1	1	0
East Roxbury	1	1	433	0	0	2
Rusch	1	0	0	0	1	1
Schaeffer	1	1	436	0	0	0
Silica district	4	3	3,306	0	1	9
Stafford	2	2	264	0	0	2
Stoltenberg	4	3	3,560	0	1	1
Sun City	*1	1	3,000	0	0	0
Trapp-Coralena	7	5	3,962	0	2	11
Ward	*1	0	0	1	0	0
East Wherry	1	1	40	0	0	3
Zenith	2	2	6,000	0	0	5
Miscellaneous:						
Butler	5	4	678	0	1	7
Greenwood	2	2	45	0	0	4
Marion	1	0	0	0	1	2
Sumner	1	0	0	0	1	3
Others	0	0	0	0	0	53
Wildcats	26	0	0	0	26	53
Ttl. Dec.	148	91	94,492	11	46	260
Ttl. Nov.	124	80	13,557	12	32	336
Difference	24	11	80,935	1	14	76

*Discovery.

NEBRASKA

Barada	2	2	480	0	0	4
Falls City	3	0	0	0	3	4
Ogle	0	0	0	0	0	1
Wildcats	1	0	0	0	1	0
Ttl. Dec.	6	2	480	0	4	9
Ttl. Nov.	8	3	1,051	0	5	21
Difference	2	1	571	0	1	12

OKLAHOMA

Altus	1	0	0	0	1	2
Apache	3	3	20,722	0	0	11
N. Bebee	8	8	911	0	0	2
N. Bristow	1	1	25	0	0	5
Burbank	1	1	24	0	0	1
Byars	1	1	210	0	0	1
Cement	3	2	522	0	1	8
Chickasha	1	0	0	1	0	4
E. Cromwell	5	5	1,078	0	0	10
Cumberland	3	3	643	0	0	5
W. Davenport	4	1	10	0	3	0
Dill	1	1	27	0	0	1
Earlsboro dist.	3	3	718	0	0	5
Ed Cox	3	3	62	0	0	2
Empire	6	3	918	0	3	4
Guthrie	2	2	765	0	0	4
W. Hewitt	5	4	308	0	1	10
Hobart	1	0	0	0	1	0
Hotulke dist.	10	10	2,261	0	0	12
Isom Spgs.	1	1	25	0	0	0
Knox	1	0	0	0	1	0
Laffoon	1	0	0	1	0	2
W. Loco	2	2	30	0	0	4
Maud	*1	1	200	0	0	0
Okla. City	5	5	980	0	0	18
Perkins	1	1	120	0	0	0
Rusk	2	2	1,167	0	0	1
Sasakwa	4	3	178	0	1	3
St. Louis, N.	6	4	1,790	0	2	7
Tecumseh Lake	2	1	196	0	1	0
E. Tecumseh	3	1	198	0	2	1
Tussy	1	1	80	0	0	3
Velma	8	6	233	0	2	5
E. Wetumka	3	3	470	0	0	0
NE Wewoka	1	0	0	1	0	1
Woolsey	1	0	0	0	1	5
Miscellaneous:						
Creek	7	2	164	1	4	11
Jackson	1	0	0	0	1	0
Jefferson	3	3	321	0	0	7
Kay	4	1	30	0	3	5
Le Flore	1	0	0	1	0	2
Logan	1	0	0	0	1	2
Muskogee	2	0	0	0	2	3
Okfuskee	3	1	44	1	1	5
Okmulgee	6	1	70	1	4	12
Osage	10	8	228	1	1	22
Pawnee	2	0	0	2	0	1
Payne	1	1	160	0	0	3
Pittsburg	1	0	0	1	0	2
Pontotoc	2	2	59	0	0	4
Seminole	4	2	60	0	2	7
Stephens	2	0	0	0	2	5
Tulsa	8	2	6	2	4	8
Wagoner	3	0	0	0	3	3
Others	0	0	0	0	0	8
Wildcats	25	0	0	0	25	49
Ttl. Dec.	195	105	36,013	13	73	296
Ttl. Nov.	124	80	13,557	12	32	336
Difference	67	25	22,456	1	41	40

NORTH TEXAS

Antelope	4	4	735	0	0	6
Briar Creek	1	1	30	0	0	2
Bryson	1	1	400	0	0	3
Coleman	1	1	475	0	0	4
Clingensmith	1	1	108	0	0	2
Griffin	1	1	85	0	0	2
Harrold	1	1	125	0	0	1
Housley-McCord	5	4	79	0	1	3
Hull-Silk	1	1	200	0	0	9
K.M.A.	20	17	4,207	0	3	32
Knox	1	0	0	1	0	1
Mathis	2	1	225	0	1	3
Newcastle	1	1	275	0	0	1
Nocona	4	2	16	0	2	4
Thornberry	4	2	60	0	2	6
Voth	1	1	24	0	0	1
Wildcats*	11	2	412	0	9	28

	Comp.	Oil	Prod.	Gas	Dry	Dig.
Misc. fields:						
Archer	7	6	101	0	1	10
Clay	25	19	999	0	6	16
Cooke	5	4	255	0	1	4
Jack	5	4	352	0	1	8
Montague	3	3	600	0	0	6
Throck-morton	4	1	15	0	3	4
Wichita	11	6	62	0	5	14
Wilbarger	2	2	349	0	0	4
Young	16	10	940	0	6	27
Subtotal	138	96	11,129	1	41	201

*Continental-Winder, Montague, Bridwell-Myers, Clay.

WEST CENTRAL TEXAS

Akard	3	1	25	0	2	4
Albany	1	1	116	0	0	1
Amity	1	1	31	0	0	2
Bluff Creek	2	1	103	0	1	2
Brooks	1	0	0	0	1	1
Brownwood gas	2	0	0	2	0	2
Crosscut	2	2	12	0	0	2
Merkel	1	1	20	0	0	4
Nail	1	0	0	0	1	2
Sayles	1	1	134	0	0	1
Sewalt	1	1	2	0	0	2
Silver Valley	1	1	20	0	0	4
Triplett	1	0	0	0	1	2
View	1	0	0	1	0	2
Wimberly	2	2	725	0	0	7
Wildcats*	16	1	3	1	14	31
Unlisted fields	0	0	0	0	0	18
Subtotal	37	13	1,191	4	20	87
Ttl. Dec.	175	109	12,320	5	61	288
Ttl. Nov.	255	156	27,868	4	95	267
Difference	80	47	15,548	1	34	21

*Schroeder-Corbett, Stephens, Shaw-Whalen, Stephens (10.5 M.c.f. gas).

NORTHERN WEST TEXAS

Cedar Lake	2	2	1,675	0	0	4
Iatan	2	1	131	0	1	6
Emma	4	4	4,782	0	0	5
Seminole	2	2	446	0	0	5
Sharon Ridge	4	4	582	0	0	7
Slaughter	60	60	67,469	0	0	89
Wasson	11	11	4,598	0	0	18
Wildcats	3	0	0	0	3	19
Misc.	0	0	0	0	0	8
Subtotal	88	84	79,683	0	4	161

SOUTHWEST TEXAS

Abell	4	4	2,934	0	0	24
Big Lake	1	1	77	0	0	1
Crockett	3	3	380	0	0	4
Estes	2	2	1,253	0	0	2
Foster	6	5	3,599	0	1	11
Fromme	1	1	69	0	0	2
Goldsmith	1	1	1,694	0	0	4
Johnson	6	6	3,050	0	0	10
Jordan	1	1	2,139	0	0	2
Keystone	4	4	1,043	0	0	9
Lehn	3	3	227	0	0	4
McCamey	1	1	240	0	0	4
McElroy	4	4	1,325	0	0	7
N. Cowden	2	2	870	0	0	11
Noelke	1	1	47	3	0	3
N. Ward	4	4	2,070	0	0	7
Pecos Valley	1	0	0	0	1	2
Sand Hills	5	4	9,444	0	1	10
Spencer	1	1	86	0	0	2
Toborg	2	2	225	0	0	2
Taylor Link	5	1	86	0	4	5
White & Baker	3	3	631	0	0	4
Waddell	1	1	362	0	0	2
Walker	1	1	49	0	0	2
World	1	1	192	0	0	2
Wildcats*	5	1	109	0	4	21
Miscel.	0	0	0	0	0	22
Subtotal	72	58	32,001	3	11	179
Ttl. Dec.	160	142	111,684	3	15	340
Ttl. Nov.	231	208	169,896	1	22	314
Difference	71	66	58,212	2	7	26

*Humble-Owens, Crockett.

TEXAS PANHANDLE

Bailey	1	0	0	0	1	0
Carson	3	3	257	0	0	5
Gray	27	23	4,534	1	3	24
Hutchinson	27	27	5,362	0	0	27
Moore	4	0	0	4	0	6
Wheeler	4	1	130	1	2	8
Ttl. Dec.	66	54	10,283	6	6	70
Ttl. Nov.	88	74	15,193	12	2	74
Difference	22	20	4,910	6	4	4

EAST TEXAS BORDER

Pine Island	1	1	100	0	0	2
Wildcats	1	0	0	0	1	5
Miscellaneous	0	0	0	0	0	4
Ttl. Dec.	2	1	100	0	1	11
Ttl. Nov.	4	1	78	0	3	10
Difference	2	0	22	0	2	1

EAST TEXAS

East Texas:*						
Longview	3	3	170	0	0	4
Kilgore	2	2	118	0	0	3
Cayuga	2	2	351	0	0	4
E. Long Lake	1	1	95	0	0	3
Grapeland	1	0	0	1	0	2
Hawkins	26	24	8,937	0	2	18
Long Lake	3	1	81	1	1	4
Opelika	1	0	0	1	0	2
Pleasant Grove	1	1	142	0	0	2
Wildcats	5	0	0	0	5	19
Miscel.	0	0	0	0	0	15
Ttl. Dec.	45	34	9,894	3	8	76
Ttl. Nov.	70	52	12,400	4	14	87
Difference	25	18	2,506	1	6	11

*East Texas field hourly production.

UPPER GULF COAST

Alta Loma	1	1	376	0	0	0
Anahuac	1	1	690	0	0	1
Barbers Hill	1	1	389	0	0	2
Blue Ridge	3	3	354	0	0	1
Big Hill	1	0	0	1	0	1
Clodine	1	1	150	0	0	2
Dyersdale	2	2	550	0	0	2
Esperson	2	2	178	0	0	5
Fig Ridge	2	2	2,272	0	0	3
Ganado	3	3	402	0	0	3
Goodrich	1	1	79	0	0	2
Hull	1	1	312	0	0	2
Lolita	5	5	860	0	0	5
Lovells Lake	2	2	690	0	0	2
Luckey	1	1	44	0	0	1
Magnet	1	1	98	0	0	1
Manvel	1	1	72	0	0	1
Martha	1	1	26	0	0	1
Maurbro	5	5	1,953	0	0	4
Navidad	1	0	0	0	1	0
N. La Ward	8	8	913	0	0	9
N. Markham	2	2	401	0	0	2
Port Neches	2	2	209	0	0	3
Red Fish Reef	1	1	204	0	0	1
Segno	1	0	0	0	1	0
Stowell	1	1	483	0	0	2
Van Vleck	1	1	182	0	0	1
W. Ganado	2	2	228	0	0	3
W. Columbia	1	1	346	0	0	3
West Ranch	6	5	625	0	1	8
Withers	8	8	932	0	0	8
Miscellaneous	3	0	0	0	3	62
Ttl. Dec.	72	65	14,018	1	6	141
Ttl. Nov.	97	77	14,897	5	15	116
Difference	25	12	879	4	9	25

LOWER GULF COAST

Agua Dulce	6	6	824	0	0	16
Ben Bolt	1	1	65	0	0	1
Clara Driscoll	1	1	102	0	0	2
East Placedo	1	1	202	0	0	0
Fagan	1	1	126	0	0	1
Halderman	1	0	0	0	1	0
La Gloria	1	1	247	0	0	3
Luby	1	1	139	0	0	0
Midway	2	2	146	0	0	2
Minnie Bock	3	3	130	0	0	2
N. Keeran	1	0	0	1	0	0
N. McFaddin	1	0	0	1	0	0
Odem	4	4	480	0	0	4
Orange Grove	3	2	148	0	1	2
Petronilla	1	1	100	0	0	2
Plymouth	1	1	144	0	0	1
Richard King	1	1	76	0	0	2
Seeligson	2	2	309	0	0	3
Stratton	3	3	295	0	0	8
Ton O'Connor	1	1	694	0	0	1
Victoria	1	1	50	0	0	0
W. Alfred	1	0	0	0	1	1
W. Tuleta	1	1	80	0	0	0
White Point	1	0	0	0	1	1
Miscellaneous	8	0	0	0	8	34
Ttl. Dec.	48	34	4,292	2	12	86
Ttl. Nov.	56	39	5,689	5	12	97
Difference	8	5	1,397	3	0	11

SOUTH TEXAS

Alta Mesa	2	2	397	0	0	1
Casa Blanca	2	2	116	0	0	2
Colorado	7	6	909	0	1	3
Driscoll	2	2	629	0	0	1
Escobas	1	0	0	0	1	0
Government Wells	2	1	85	0	1	1
Hoffman	2	2	118	0	0	1
Henne-Winch-Farias	1	0	0	0	1	0
Kelsey	2	2	218	0	0	3
Holbein	1	1	150	0	0	1
Killam	3	3	180	0	0	1
Jacob	1	1	8	0	0	0
Kreis	1	0	0	0	1	2
Lopez	1	0	0	0	1	0
Lopeno	1	0	0	0	1	0
Lundell	1	1	11	0	0	1
Manila	1	0	0	0	1	1
Oakville	3	3	181	0	0	1
Nichols	2	1	72	0	1	1
Piedra de Lumbre	3	2	168	0	1	2
Peters	1	0	0	0	1	0
Rincon	7	7	1,179	0	0	5
South White Creek	1	0	0	0	1	2
Sun	4	4	390	0	0	3
S. Campana	2	1	40	1	0	2
Sweden	1	0	0	0	1	1
West Kelsey	1	0	0	0	1	1
Yturria	1	1	150	0	0	1
Miscellaneous	10	0	0	0	10	40
Ttl. Dec.	67	42	5,001	2	23	77
Ttl. Nov.	57	35	4,227	3	20	78
Difference	10	7	774	1	3	1

SOUTH CENTRAL TEXAS

Bee Creek	1	1	56	0	0	1
Chapman Ranch	1	1	4	0	0	0
Elgin	1	0	0	0	1	1
Gas Ridge	5	5	10	0	0	3
Ina	1	1	2	0	0	0
La Coste	1	0	0	1	0	1
Lentz	1	1	27	0	0	2
Luling	1	1	6	0	0	0
Maverick	1	0	0	1	0	0
Minerva-Rockdale	1	1	2	0	0	1
Tenney Creek	1	1	49	0	0	2
Thrall	1	0	0	0	1	0
Washburn	1	1	470	0	0	2
Miscellaneous	7	7	0	0	7	40
Ttl. Dec.	24	14	626	1	9	53
Ttl. Nov.	11	8	551	0	3	47
Difference	13	6	75	1	6	6

SOUTHEAST NEW MEXICO

Eddy County	8	7	423	0	1	24
Lea County	7	5	1,000	0	2	25
Ttl. Dec.	15	12	1,423	0	3	49
Ttl. Nov.	23	18	1,962	0	5	66
Difference	8	6	539	0	2	17

ARKANSAS

East Schuler	2	2	336	0	0	2
Fouke	1	0	0	0	1	1
Macedonia	1	0	0	1	0	3
McKamie	1	0	0	1	0	3
Mount Holly shallow	1	1	45	0	0	0
Stephens deep	1	1	50	0	0	0
Urbana	1	0	0	1	0	2
Wildcats	2	0	0	0	2	8
Miscellaneous	0	0	0	0	0	9
Ttl. Dec.	10	4	431	3	3	28
Ttl. Nov.	14	6	2,209	4	4	30
Difference	4	2	1,778	1	1	2

Gas production: Macedonia, 3,850,000 cu. ft.; McKamie, 2,284,000 cu. ft.; Urbana, 20,000,000 cu. ft.

MISSISSIPPI

Tinsley	25	23	9,901	0	2	16
Wildcats*	5	1	443	0	4	9
Miscellaneous	0	0	0	0	0	2
Ttl. Dec.	30	24	10,344	0	6	25
Ttl. Nov.	24	19	11,329	0	5	30
Difference	6	5	985	0	1	5

*Pickens-Sharpsburg field discovery in Madison County.

ALABAMA

Wildcats	1	0	0	0	1	2
Ttl. Dec.	1	0	0	0	1	2
Ttl. Nov.	1	0	0	0	1	2
Difference	0	0	0	0	0	0

NORTH LOUISIANA

Caddo	12	11	677	0	1	12
Converse	2	0	0	0	2	1
Haynesville deep	1	1	667	0	0	3
Homer	1	1	32	0	0	0
Kelly	1	0	0	0	1	0
Larto Lake	1	0	0	0	1	1
Little Creek	10	7	939	3	0	9
Logansport	2	0	0	2	0	1
Monroe	4	0	0	4	0	4
Nebo	18	14	1,979	0	4	21
Olla	5	3	86	0	2	7
S. Olla	3	2	223	0	1	1
Sligo	3	3	108	0	0	1
Standard	1	0	0	1	0	0
Urania	3	2	73	0	1	2
Willow Lake	1	1	142	0	0	1
Wildcats	22	2	190	0	20	23
Miscel.	0	0	0	0	0	8
Ttl. Dec.	90	47	5,116	10	33	96
Ttl. Nov.	69	38	3,647	9	22	89
Difference	21	9	1,469	1	11	7

Gas production:

Monroe	19,368,000 cu. ft.
Little Creek	88,000,000 cu. ft.
Logansport	25,400,000 cu. ft.
Standard	29,000,000 cu. ft.

LOUISIANA GULF COAST

Anse La Butte	4	3	527	0	1	7
Bayou Blue	2	2	941	0	0	6
Bay St. Elaine	1	1	129	0	0	1
Belle Isle	1	0	0	0	1	2
Black Bayou	1	1	331	0	0	1
Bosco	1	1	116	0	0	3
Caillou Island	1	0	0	0	1	0
Cameron Meadows	1	0	0	0	1	2
Chacahoula	1	1	139	0	0	2
Delta Duck Club	1	1	457	0	0	0
E. Hackberry	1	1	235	0	0	4
Edgerly	1	0	0	0	1	1
Erath	1	1	335	0	0	1
Garden Island	1	1	237	0	0	2
Golden Meadow	4	4	1,199	0	0	3
Grand Bay	2	2	406	0	0	1
Jefferson Island	1	1	235	0	0	1
Jennings	1	1	161	0	0	3
Lafitte	1	1	452	0	0	1
Lake Chicot	1	1	324	0	0	1
Lakeside	1	1	58	0	0	1
Lake Long	1	1	288	0	0	1
La Pice	1	0	0	0	1	0
Lewisburg	1	1	51	0	0	1
Little Chenier	1	1	18	0	0	0
New Iberia	1	1	120	0	0	4
N. Crowley	2	2	794	0	0	1
Paradis	3	3	1,232	0	0	3
Pine Prairie	1	1	281	0	0	3
Port Barre	1	1	237	0	0	3
Raceland	1	1	250	0	0	0
Richie	2	1	60	0	1	1
Roanoke	1	1	205	0	0	0
St. Gabriel	3	2	519	0	1	3
Sulphur	1	1	36	0	0	1
Unknown Pass	1	1	40	0	0	0
Ville Platte	3	3	625	0	0	10
Vinton	1	1	133	0	0	3
West Bay	1	1	333	0	0	1
White Castle	1	1	189	0	0	1
Woodlawn	1	0	0	0	1	1
Miscellaneous	1	0	0	0	1	60
Ttl. Dec.	58	48	11,683	0	10	140
Ttl. Nov.	69	47	12,430	2	20	151
Difference	11	1	747	2	10	11

MONTANA

Bowdoin	6	0	0	6	0	18
Bowes	1	0	0	1	0	0
Box Elder	1	0	0	0	1	0
Cedar Creek	1	0	0	0	1	0
Cut Bank	13	10	2,219	0	3	12
Devon	1	0	0	1	0	0
Kevin Sun-burst	7	3	305	3	1	19
Miscel.	0	0	0	0	0	23
Ttl. Dec.	30	13	2,524	11	6	72
Ttl. Nov.	18	10	1,165	5	3	98
Difference	12	3	1,359	6	3	26

WYOMING

Frannie	1	1	323	0	0	1
Horne Valley	1	0	0	0	1	0
La Barge	1	1	123	0	0	2
Miscel.	0	0	0	0	0	58
Ttl. Dec.	3	2	446	0	1	61
Ttl. Nov.	17	13	1,939	1	3	63
Difference	14	11	1,493	1	2	2

COLORADO

Iles	1	0	0	0	1	0
Moffat	1	1	173	0	0	1
Miscel.	1	0	0	0	1	38
Ttl. Dec.	3	1	173	0	3	39
Ttl. Nov.	3	0	0	1	2	41
Difference	0	0	173	1	1	2

NORTHWEST NEW MEXICO

Bloomfield	1	0	0	0	1	1
Fulcher Basin	2	1	40	0	1	2
Miscel.	0	0	0	0	0	8
Ttl. Dec.	3	1	40	0	2	11
Ttl. Nov.	1	1	50	0	0	10
Difference	2	0	10	0	2	1

CALIFORNIA

Arvin	0	0	0	0	0	1
Belridge, N.	1	1	110	0	0	3
Canal	0	0	0	0	0	1
Coalinga	4	4	8,020	0	0	7
Coles Levee	3	2	1,490	1	0	2
Coyote, E	1	1	528	0	0	0
Coyote, W	1	1	40	0	0	2
Delano, gas	1	0	0	1	0	0
Dominguez	0	0	0	0	0	2
Edison	1	1	250	0	0	1
Elk Hills	1	1	57	0	0	4
Greeley	4	4	9,466	0	0	5
Helm	0	0	0	0	0	1
Huntington Beach	3	3	321	0	0	3
Inglewood	1	1	1,850	0	0	4
Jacalitos	0	0	0	0	0	1
Kern River	1	1	5	0	0	4
Kettleman N. Dome	1	1	229	0	0	8
Long Beach	0	0	0	0	0	2
Lost Hills	0	0	0	0	0	3
Marysville Buttes	0	0	0	0	0	1
Midway-Sunset	1	1	160	0	0	4
Mount Poso	6	6	1,689	0	0	6
Paloma	0	0	0	0	0	2
Potrero	0	0	0	0	0	1
Raisin City	0	0	0	0	0	3
Rincon	1	1	75	0	0	1
Rio Bravo	2	2	2,370	0	0	3
Rio Vista gas	1	0	0	1	0	3
Riverdale	1	1	558	0	0	0
Rosecrans	0	0	0	0	0	4
Round Mt.	0	0	0	0	0	1
San Miguelito	1	1	1,734	0	0	1
Santa Maria	1	1	1,257	0	0	5
Santa Maria Valley	6	6	2,377	0	0	9
Shafter	0	0	0	0	0	1
Strand	0	0	0	0	0	1
Ten Section	2	2	1,278	0	0	2
Torrance	4	4	476	0	0	2
Tupman	1	1	392	0	0	2
Turnbull Canyon	0	0	0	0	0	1
Union Ave.	0	0	0	0	0	2
Ventura Ave.	4	4	3,883	0	0	10
Ventura Newhall	1	1	1,427	0	0	12
Whittier	0	0	0	0	0	1
Wilmington	10	10	5,386	0	0	10
Wildcats	3	0	0	0	3	28
Tel. Dec.	68	62	45,428	3	3	170
Ttl. Nov.	116	96	60,492	4	16	174
Difference	48	34	14,964	1	13	4

Personal Paragraphs

EARL A. TARVER has been appointed head of the geological department of Superior Oil Corp., of Tulsa. Mr. Tarver was formerly assistant chief geologist of the company. He is a graduate of University of Oklahoma and formerly was associated with Red Bank Oil Co. and Mid-Continent Petroleum Co.

HARRY T. HUNTER, formerly stationed in Stanolind Oil & Gas Co.'s engineering offices at Fort Worth, Tex., has been transferred to the company's Tulsa offices. LOUIS FINCH, production engineer, has taken over Mr. Hunter's former duties. RALPH GRAY, junior petroleum engineer formerly stationed at Hobbs, N. M., has been transferred to Stanolind's district production engineering offices at Fort Worth.

JAMES L. GRIZZARD, Tulsa oil operator, has temporarily moved his residence to Denton, Tex.

DR. HENRY X. BAY, district geologist for the Texas Co. at Shreveport, La., has been transferred to the company's offices at Houston, Tex.

W. G. SKELLY, president, Skelly Oil Co., Tulsa, has accepted the general chairmanship of the President's Birthday Ball, January 30, at Tulsa.

C. V. ALLEN, Texas Cities Gas Co., Galveston, Tex., has been elected president of the Galveston Kiwanis Club.

C. C. HOGG, oil man of Pleasantville, Pa., has gone to Washington, D. C., where he has joined the staff of LEON HENDERSON, director of the Office of Price Administration. Mr. Hogg is general manager of National Petroleum Co.

New officers of the Fort Worth Geological Society, who were inducted on Monday, are: President, JOHN B. LOVEJOY, Gulf Oil Corp.; vice president, KARL A. MYGDAL, Pure Oil Co.; and secretary-treasurer, R. H. SCHWEERS, Texas Co.

L. MOSELEY MOFFITT, oil man of Shreveport, La., was last week reelected president of the Shreveport Chamber of Commerce. Mr. Moffitt is secretary-treasurer of Triangle Drilling Co., and past president of the Louisiana-Arkansas division, Mid-Continent Oil and Gas Association.

FAYETTE B. DOW, general counsel, National Petroleum Association, has been named on the staff of the Office of Defense Transportation, headed by Joseph B. Eastman, which is charged with the job of gearing the nation's transportation facilities to the new war effort.

VIC E. BAUM has resigned as production superintendent for Ryan Consolidated Petroleum Co., and he has been succeeded by WALTER ZIEGLER, Dallas, Tex., who was formerly production superintendent for H. S. Moss, independent operator of Dallas.

PROF. HENRY EMMETT GROSS, associate professor of petroleum engineering at Texas A. & M. College since 1938, has been appointed associate petroleum production analyst in the Chicago office of the Office of Petroleum Coordinator. Prior to his joining the faculty at the Texas college, Professor Gross had served 2 years as assistant professor of petroleum at University of Oklahoma. Earlier he was with Shell Oil Co., Inc., in Kansas, Oklahoma, Texas and California, and prior to 1929 he was on the engineering staff of Western Oil Co., in California. Mr. Gross was graduated from Missouri School of Mines in 1928, and holds a master of science degree from University of Illinois.

WILLIAM O. BEALL, counsel for Sinclair Prairie Oil Co., Tulsa, was reelected president of the Osage Oil and Gas Lessees Association at the annual meeting of the membership last week. It is the fourth term for Mr. Beall. W. P. Z. GERMAN, counsel for Skelly Oil Co., was reelected vice president, and CLAREL B. MAPES was reelected secretary and treasurer.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

On Tuesday of this week, Pennsylvania crude passed the $3 mark, the quotation being $3.05 a barrel. Other grades were also advanced.

When the Magnolia Petroleum Co. closed its deal for the properties and production of the McMan Oil Co. for $35,000,000, a new record was made in oil transactions.

Col. John J. Carter, retired oil man of Titusville, Pa., died in New York January 3. He was young when oil operations were brisk in the Oil Creek district in Pennsylvania and he quit mercantile pursuits to engage in the petroleum business. The Bradford field, later on, afforded a means of advancement to his interests and there the Carter Oil Co. became a well-established, prosperous concern.

20 YEARS AGO

The name of the Wyoming Oil World, of Casper, Wyo., which A. J. Hazlett, formerly advertising manager of the Producers & Refiners Corp., purchased last summer, was changed to the Inland Oil Index with the issue of January 7.

Even in the face of the 50-cent cut in the price of Pennsylvania crude and accompanying declines in other eastern oils, the market for refined products showed a decided stiffening last week.

The Petro Oil Co. of St. Louis brought in its second good well in the new pool near Centralia in Marion County, Illinois, last week.

10 YEARS AGO

Iver Johnson, 81, one of the original locators of Teapot Dome in the Salt Creek oil field, died at his home in Cheyenne, Wyo., last week. Mr. Johnson disposed of his holdings in Salt Creek before the boom, however.

Aerial photography already has entrenched itself as an important part of the oil business, mostly in making surveys for new pipe lines. More recently, it has been utilized by some geologists in tracing the outcrops of faulting, contacts and other geological markers.

S. J. BRADFORD, district electrical foreman in the Darrow district for the Humble Oil & Refining Co., has been transferred to the Bayou Sale district.

R. M. HESS, production engineer for the Shell Oil Co., Inc., at Lake Charles, La., has been transferred to the East Texas division at Kilgore as production engineer.

EDWARD R. HUDSON, Fort Worth, Tex., attorney and oil man, has purchased a bicycle, which he rides to the office every morning. Mr. Hudson reports that the downtown trip is downhill, but that the return trip presents serious problems.

MARK M. GARNETT, formerly in the production engineering department for Union Producing Co., Shreveport, La., has been transferred to the company's Beeville, Tex., district as petroleum engineer in the general engineering department.

JOHN W. HANCOCK has been elected a director of Hancock Oil Co., succeeding E. E. PYLES, vice president of the company, who resigned January 1, 1942, in order to devote his entire time to administering the California production plan. Mr. Pyles is chairman of the production committee for District 5.

EUGENE FISHER, formerly petroleum engineer for Standard Oil & Gas Co. at its division offices in Fort Worth, Tex., has been transferred to the company's offices in the North Cowden field, near Odessa, Tex., where he will become production foreman. He will be succeeded by A. R. BROWN, formerly petroleum engineer for the company in North Cowden.

G. F. ABENDROTH, district petroleum engineer in the Potash district for Humble Oil & Refining Co., has been transferred to the Darrow district.

L. V. MANRY and W. K. ESGEN, vice presidents of Trinity Petroleum Co., Houston, Tex., have resigned and have formed a partnership to engage in the oil business for themselves.

MISS S. GRACE HOWER has been appointed aero geologist for Seismograph Corp. in the aero-geological department. Miss Hower was formerly with Aero Exploration Co., Tulsa, as geologist.

CLYDE CLACK, who has been manager at McKinney, Tex., for Community Natural Gas Co., has been made manager at Durant, Okla., and will supervise gas service at Achille, Caddo and Durant, Okla.

H. S. COLE, JR., former division manager in the West Texas division of the Texas Co., Fort Worth, Tex., has been made assistant manager of the production department, succeeding C. B. WILLIAMS, who has been appointed division manager.

F. L. MARTIN, vice president of Sunray Oil Co., Tulsa, has returned from Wilmington, Calif., where he attended a meeting of Douglas Oil & Refining Co. board of directors. Douglas has completed a new refinery at Wilmington in which Sunray is financially interested.

J. OOSTERMEYER has been elected president of Shell Chemical Co., San Francisco, Calif., succeeding C. B. de BRUIJN, who retired after 33 years with Shell. Mr. Oostermeyer, who has been with Shell for 25 years, has been vice president of Shell Chemical since 1939.

Taught By Experience

A background of nearly 20 years of practical experience in oil fields of Texas, Oklahoma and Kansas gave Chester M. Harden, division superintendent for Pure Oil Co., at Olney, Ill., particular qualifications for his duties there.

CHESTER M. HARDEN

Since 1937, when Mr. Harden was made division superintendent in Illinois, his field organization has completed about 1,300 wells. In addition, he has directed the multitudinous details concomitant with an extensive exploration program scattered over much of the southern part of the state.

"Ches" was born on April 25, 1898, at Santa Barbara, Calif. He moved with his parents to Kansas at the age of 4 years; then to Oklahoma 3 years later. In 1914, his family moved to Drumright, Okla., where Ches attended high school. Upon graduation, he attended Oklahoma University and was a member of N.S.T.C., and of the Naval Reserve.

His wide experience in producing oil has been acquired since high school days through actual work in fields of Oklahoma, Kansas and Texas at almost all jobs from laborer to superintendent.

Prior to his employment with Pure, he was with States Oil Corp. from 1920 to 1931 in West Texas and from 1931 to December 1, 1934, in East Texas with Weaver-Crim, a subsidiary of the States company. Mr. Harden joined Pure Oil Co. as assistant superintendent at Van, Tex., and on March 1, 1937, was transferred to Olney, Ill., to serve as division superintendent of the company's newly established division.

In May 1919 Mr. Harden married Celia Kribbs. They have two boys and two girls, Joe, Jerry, Joyce and Judy.

LEW WENTZ, Ponca City, Okla., oil man, spoke at the Tulsa Chamber of Commerce open forum luncheon last week.

W. C. SAMUELS, credit manager, Texas Co., Houston, Tex., is the new president of the Houston Association of Credit Men.

J. C. CHATFIELD, who since May 1940 has been manager of special sales for Indian Territory Illuminating Oil Co., has joined the staff of the special-products department of Phillips Petroleum Co., Bartlesville, Okla.

CHARLES S. JONES, president, Richfield Oil Corp., is chairman of California's birthday celebration in honor of President Roosevelt, and REESE H. TAYLOR, president of Union Oil Co., is heading the Red Cross drive.

VERNON BALZER, representing W. W. GARY, of the Office of Petroleum Coordinator, has arrived in California and has opened offices in Los Angeles from which he will make a survey of refining facilities and later coordinate production as far as possible.

REX TOWNSEND has been invited by the Bolivian Government to act as consultant and assistant to the minister of economy during the reorganization of the Bolivian petroleum industry. He leaves for La Paz during January and expects to be in Bolivia about 3 months.

CLAUDE P. PARSONS, Duncan, Okla., addressed the members of the East Texas section of the American Institute of Mining and Metallurgical Engineers at the Kilgore Hotel, Kilgore, Tex., the first part of the week. Mr. Parsons' subject was on the "Use of Subsurface Calipers in Well Logging."

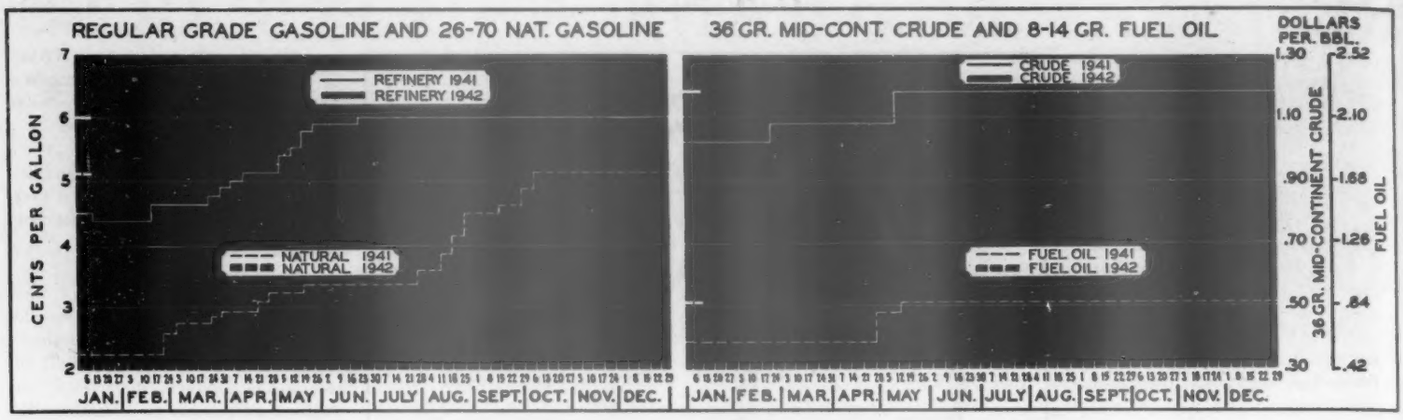
CHARLES C. BROWN, Ponca City, Okla., has been appointed assistant director of production, District 2, Office of Petroleum Coordinator, and will go to Chicago, where he will make his headquarters. Mr. Brown was formerly vice president of the old Marland Oil Co., in charge of production and pipe lines, and for a period was tax commissioner of Oklahoma.

Shifts: E. H. SHANNON, engineer, Texas Co., from Laredo to Alice, Tex.; BILL IVERSON, engineer, Continental Oil Co., from Midland to Cuero, Tex.; J. B. NUGENT, superintendent, Superior Oil Co., from Odessa, Tex., to Carmi, Ill.; HERMANDO MADERO, engineer, Magnolia Petroleum Co., from Beaumont, Tex., to Bogota, Colombia; LESLIE C. RICKEY, engineer, Stanolind Pipe Line Co., from Marysville, Tex., to Drumright, Okla.; L. D. BECHTEL, superintendent, Ohio Oil Co., from Kyle, to McFadden, Wyo.; JEFF W. MITCHELL, engineer, Phillips Petroleum Co., from Kansas City, Kans., to Bartlesville, Okla.; V. T. SMITH, superintendent, F. H. Allan Co., from Great Bend to Stafford, Kans.; J. F. DARBY, president, Darby Lynde Co., from Muskogee to Chandler, Okla.; R. N. BILLS, engineer, Amerada Petroleum Corp., from Lake Charles to Thibodaux, La.; G. FLINT SAWTELLE, engineer, Humble Oil & Refining Co., from Hawkins to Gladewater, Tex.; MERL DEMPSEY, superintendent, Magnolia Petroleum Co., from Seminole to Brownfield, Tex.; R. D. SPILLE, engineer, Carter Oil Co., from Harden City, Okla., to Brooklyn, N. Y.; W. H. MATTHEWS, engineer, Magnolia Petroleum Co., from Drumright, Okla., to Kilgore, Tex.; VICTOR CHANCELLOR, superintendent, Sinclair-Wyoming Oil Co., from Baroil, Wyo., to Great Bend, Kans.; D. M. ENGLE, superintendent, Sinclair Prairie Oil Co., from Tulsa to Caracas, Venezuela; JOHN E. MILLER, superintendent, Sinclair Prairie Oil Co., from Great Bend, Kans., to Caracas, Venezuela; T. C. PRESTON, superintendent, Sinclair Prairie Oil Co., from Hobbs, N. M., to Odessa, Tex.; J. T. REEVES, superintendent, Exchange Oil Co., from Jackson, Miss., to Sinclair-Wyoming Oil Co., Carmi, Ill.; LON SURRETT, superintendent, Sinclair Prairie Oil Co., from Odessa, Tex., to Hobbs, N. M.; R. A. WRIGHT, superintendent, Exchange Oil Co., from Carmi, Ill., to Sinclair Prairie Oil Co., Wink, Tex.

HUGH D. MISER, geologist in charge, Division of Fuels, U. S. Geological Survey, Washington, D. C., has been addressing geological societies in Oklahoma, including Ardmore, Shawnee and Tulsa. The subject of his Tulsa address was "Quartz Veins in the Ouachita Mountains of Oklahoma and Arkansas."

EUGENE D. MILLIKEN, who has been actively engaged in the oil business since 1922, has been appointed United States senator of Colorado by Gov. Ralph L. Carr, to succeed the late Alva B. Adams. Mr. Milliken took over the management of the late Karl C. Schuyler's oil interests in 1933. He will resign from his various oil interests before taking office.

L. P. TEAS, formerly chief geologist for the Humble Oil & Refining Co., Houston, Tex., opened offices in Houston the past week for consulting work in petroleum geology and evaluation of oil and gas properties. JAMES I. RIDDLE, formerly chief scout for the Humble Oil & Refining Co., resigned to become an associate with Mr. Teas in his new business.


REGULAR GRADE GASOLINE AND 26-70 NAT. GASOLINE
CENTS PER GALLON
REFINERY 1941
REFINERY 1942
NATURAL 1941
NATURAL 1942
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.
36 GR. MID-CONT. CRUDE AND 8-14 GR. FUEL OIL
DOLLARS PER BBL.
CRUDE 1941
CRUDE 1942
FUEL OIL 1941
FUEL OIL 1942
36 GR. MID-CONTINENT CRUDE
FUEL OIL
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.

MARKET DEVELOPMENTS . . .

East Coast

NEW YORK, Jan. 13.—Evidence that the implied ceiling on Atlantic Coast prices is effective was given last week when OPA denied the request of several companies for a 15-cent advance in Bunker C fuel-oil prices. As a result prices were kept at present levels: Albany, N. Y., $1.55; Portland, Boston, Providence, New York, Philadelphia and Baltimore, $1.35; Charleston, Savannah, Jacksonville, $1.30; and Tampa, $1.25. It was also extended to the Gulf where prices were pegged to 85 cents per barrel.

The oil companies' request was made weeks ago. One of the principal reasons was the unsatisfactory position of residual fuel oil from a current supply standpoint. East Coast stocks are only slightly greater than a year ago, a situation that is not regarded as entirely safe in view of the greater industrial demand. The oil companies believed that better prices would increase the supply. This factor along with transportation rates and production costs were reported to have been considered by OPA in reaching its negative decision.

Despite the reports of two charters and the sale of two tankers last week, there is increasing evidence of a growing tightness in the tanker market. These developments would indicate the contrary but it is known that some companies find it impossible to get tankers and there may have been more than a little significance in the increase in volume of oil delivered by tank car to the East Coast in the previous week. Another possible indication is the continued decline in East Coast inventories which has not been limited to heating oil.

In view of these factors the accuracy of the OPC prediction that gasoline consumption would drop 35 per cent as a result of tire rationing and thereby obviate any need for rationing is subject to question. The absence of tanker and refining capacity surpluses is generally expected to be more of a determining factor than tire rationing in whether or not it will be necessary to limit the sale of oil products. Petroleum economists feel certain that tire rationing will not seriously affect oil consumption before 1943.

The OPA permitted a 0.5-cent increase in gasoline tank-wagon prices in those areas of Virginia and Maryland adjacent to the District of Columbia. It was exclusively a matter of tax adjustment, however, and no other factors were considered.

Gulf Coast

HOUSTON, Tex., Jan. 12.—For the first time in many weeks some gasoline was being offered Monday on the Gulf Coast spot market. The material was reported to be 72-74 octane. The appearance of the gasoline when refiners generally are reported sold up has had no weakening effect on the market so far.

Barge movements of gasoline to feed the newly opened product line built by Plantation Pipe Line Co. from Baton Rouge, La., to Greensboro, S. C., were started the past week. These now amount to between 10,000 and 15,000 bbl. daily. Principal shippers are Humble Oil & Refining Co. out of Baytown, Shell Oil Co., Inc., out of Deer Park Republic Oil Refining Co. and Southport Petroleum Co. out of Texas City, and Continental Oil Co. out of West Lake (Lake Charles), La. These supplement shipments by Standard Oil Co. of Louisiana from Baton Rouge.

Inquiries for at least two cargoes of 41-43 water white kerosene were received by Gulf Coast refiners Monday. Buyers offered 4.25 cents. While quotations range from 4.25 to 4.5 cents. There is no material available now under 4.625 cents.

Requests were made last week by the Navy for bids on 6,000,000 bbl. of residual fuels for lend-lease account. The Army Air Corps has requested bids for 5,000,000 bbl. of aviation gasoline for January-through-June delivery.

Sentence Summaries

MID-CONTINENT: Gasoline shipments recede, fuel deliveries increase.

EAST COAST: Tire rationing and weather depress motor-fuel consumption. Heating-oil deliveries rise.

GULF COAST: Lend-lease business continues to absorb most products.

PACIFIC COAST: Gasoline soft. Fuel oil unchanged but trading less active.

PENNSYLVANIA: Lubricating oils in strong demand. Gasoline unchanged.

A.P.I. REFINERY REPORT

(Week ended January 3)
(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks: Gasoline	Residual	Gas oil
East Coast	668	20,118	11,933	19,132
Appalachian	141	3,781	533	438
Ind., Ill., Ky.	703	18,211	4,488	5,107
Okla., Kans., Mo.	342	8,813	2,297	1,477
Inland Texas	186	3,200	1,452	174
Texas Gulf	1,086	15,720	8,907	8,317
Louisiana Gulf	161	3,545	2,452	1,689
N. La. and Ark.	83	848	370	110
Rockies	88	1,830	580	293
California	503	16,923	62,845	12,620
Total Jan. 3, 1942	3,961	92,987	95,857	49,357
Total Dec. 27, 1941	4,096	91,133	95,819	50,177
Total Jan. 4, 1941	3,588	85,134	101,048	42,958

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended:	Bbl. of crude*
January 3, 1942	244,440,000
December 27, 1941	243,990,000
January 4, 1941	260,843,000

*Figures do not include heavy, unrefinable crude in California.

Mid-Continent

MIDDLE WEST customers continued their search this week for additional supplies of both light and heavy fuel oils in the Mid-Continent as refiners attempted to gage the factors depressing shipments of motor gasoline. The winter's coldest weather in many northern states drawing a bulk of their fuel-oil supplies from Mid-Continent refineries developed a wave of buying orders that probably boosted tank-car shipments of burning products to an unprecedented peak.

Meanwhile, refiners sought the answer to just how much of the slackened business in motor fuel can be attributed to inclement winter weather and how much should be assigned to curtailed use of automobiles caused by tire rationing and discontinuance of car manufacturing. Mostly, the gasoline-market conditions reflected an attitude of watchful waiting. Refiners were unwilling to accept first half of January business as a fair indication of a long-term trend in motor-fuel consumption because weather conditions that have prevailed for the past 3 weeks would have depressed car operation even in peacetime.

Another concern of Mid-Continent refiners was the proposal of trunk-line railroads to increase freight rates on petroleum products shipped by tank cars. Strong opposition to the rate advance was placed in the record last week during a portion of the hearing at St. Louis, Mo. Refiners are facing the prospect of delivering greater quantities of petroleum by rail during the war period.

Meanwhile, prices throughout the Mid-Continent remained unchanged and were reported firm. Some plants are unable to consider prospective business for fuel oils but there is little prospect that higher prices will result from the tight supply situation. Gulf and East Coast refiners were thwarted in their efforts to advance residual-fuel prices. Mid-Continent plant operators feel that any upward movement of prices in the Middle West would fail to gain approval from the Office of Price Administration.

Gasoline engaged by the Government for delivery during the first 3 months has shown a general price increase of 0.5 to 2 cents per gallon over the stipulations in contracts for the first quarter of 1941. Delivery prices on government contracts for the first quarter this year are also higher than for the last 3 months of 1941.

REFINERY AND TANK-WAGON PRICES

(Prices as of January 13)

Refinery Gasoline

Octane (A.S.T.M.):	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*	.....	.....	6.000-6.250	.....	5.625-5.875	5.250-5.500
Pennsylvania	7.750-8.000	6.750-7.000	6.750-7.000	.....	.....	.....
Gulf Coast	6.625-6.875	.....	6.250-6.375	6.250-6.500	.....	.....
Northeast Coast	8.500	.....	8.000	8.000	.....	.....
Pacific Coast	7.000-7.500	.....	6.625-6.875	.....	6.375-6.500	.....

*Basis Oklahoma Group 3.

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(375-390)
Oklahoma	5.125	6.125-6.250	.....
North Texas	4.750	5.625-5.750	.....
North Louisiana	4.750	5.625-5.750	.....
California	.....	.....	4.500-5.000

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Oklahoma	.....	.....	4.500-4.750	4.375-4.625	.....
North Louisiana	.....	.....	4.375-4.500	.....	.....
Pennsylvania	6.250-6.500	6.375-6.725	.....	.....	.....
California	.....	.....	.....	4.500-6.000	4.500-5.000
Northeast Coast	.....	.....	.....	5.300	.....
Gulf Coast	.....	.....	.....	4.250-4.500	.....

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48°G.	24 D.I.	48-52 D.I.	58&above	Diesel bunkers	Bunker C
Mid-Continent	4.125-4.250	.....	.....	.....	.....	.....
California	.....	2.750-4.000	.....	.....	.....	$0.75-85
Gulf Coast	.....	.....	4.125-4.250	4.250-4.375	$1.45	0.85-90
Northeast Coast	.....	.....	.....	5.200	2.15	1.35
North Louisiana	.....	.....	.....	.....	....	*0.80-0.85

*10-14° gravity.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent	3.6-3.8	3.5-3.7	$0.85-90	$0.85-90
Pennsylvania (West)	5.6-6.0	5.5-6.0	*5.5-5.875	.....
Northeast Coast	5.2	5.2	$1.65-75	$1.35
Pacific Coast	5.5	5.5	†0.85-95	‡0.80-85
Gulf Coast	4.0	.....	1.65	0.85-90

*36-40 gravity fuel oil. †Pacific specification 300. ‡Pacific specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.50
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	18.00

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.50
500-3½	20.50
600-3½	21.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Neutral Oil

CALIFORNIA—		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		38.50
10 pour point		37.50
15 pour point		36.50
25 pour point		31.00
200 vis., at 70° F., 3 color:		
Zero pour point		40.50
10 pour point		39.50
15 pour point		38.50
25 pour point		33.00

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	....
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	....
124-126 (A.m.p.) w.c. scale	....

Note: Most refiners are not quoting on wax pending interpretations of OPA order.

NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	....
133-135 (A.m.p.) wax	....
Crude scale:	
124-126 (A.m.p.) w.s.	....
124-126 (A.m.p.) y.s.	....

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast	.....	6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250	.....	4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30	.....	....	1.35-45	*0.85-90

*Pacific specification 400.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S.R.
Mid-Continent	16.8	.....	28.8	24.8	.....
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	14.75	5.50	8.70
Boston, Mass.	13.70	4.50	8.00
Burlington, Vt.	15.70	5.50	8.30
Buffalo, N. Y.	15.00	5.50	8.30
Dover, Del.	15.50	5.50	10.50
Hartford, Conn.	14.40	4.50	7.60
Manchester, N. H.	16.10	5.50	9.00
Newark, N. J.	14.00	4.50	7.90
New York, N. Y.	14.90	5.50	8.00
Philadelphia, Pa.	15.00	5.50	10.15
Pittsburgh, Pa.	15.50	5.50	10.50
Portland, Me.	15.10	5.50	8.10
Providence, R. I.	13.80	4.50	7.80
Washington, D. C.	13.00	3.50	9.20
Average 14 cities	14.75	5.07	8.72

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	14.10	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	11.90	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.25	8.00	8.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	15.00	7.00	8.00
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	14.90	5.57	9.44

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	18.50	7.50	10.00
Birmingham, Ala.	19.00	8.50	9.00
Charleston, S. C.	17.75	7.50	....
Charleston, W. Va.	18.05	6.50	11.50
Charlotte, N. C.	18.90	7.50	9.50
Jacksonville, Fla.	18.50	8.50	8.00
Jackson, Miss.	18.00	7.50	9.00
Louisville, Ky.	17.00	6.50	8.50
Memphis, Tenn.	17.75	8.50	10.50
New Orleans, La.	17.75	8.50	*10.50
Norfolk, Va.	16.25	6.50	10.20
Average 11 cities	17.95	7.59	9.67

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	4.50	11.50
Average 3 cities	16.17	5.17	12.17
Average 50 cities	16.03	5.96	9.80
Average last week	16.04	5.96	9.80

Price Dates

Prices quoted on this page in The Oil and Gas Journal of January 8, 1942, were for conditions as of January 6. Prices in the December 25, 1941, issue were as of December 23 and those in the December 18, 1941, number were as of December 16.

Selected Crude Prices

Allied Pipe Line Corp., effective December 16, 1941, made its initial posting for crude produced in the Pickens-Sharpsburg (Mississippi) field. The gravity table starts at 68.5 cents per barrel for crude of 24° to 24.9° and scales up at increments of 2 cents to a top of $1.005 for 40° and above.

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.96
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	2.75

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas, Lea County, N.M.
18-18.9	$0.80	....	....	....
19-19.9	.84	....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	....	1.07	1.30	.94
32-32.9	....	1.09	1.32	.96
33-33.9	....	1.11	1.34	.98
34-34.9	....	1.13	1.36	1.00
35-35.9	....	1.15	1.38	1.02
36-36.9	....	1.17	1.40	1.04
37-37.9	....	1.19	1.42	1.06
38-38.9	....	1.21	1.44	1.08
39-39.9	....	1.23	1.46	1.10
40 and above	....	1.25	1.48	1.12

Tank-Wagon Changes

Standard Oil Co. (Indiana) advanced the consumer tank-wagon price of regular gasoline 2.7 cents on November 28 at Quincy, Ill., and the dealer price was raised 2.2 cents on the same day. The consumer tank-wagon quotation was reduced 1.5 cents at Des Moines, Iowa, October 17. Standard lowered the dealer price 1 cent November 18 at Decatur, Ill. The dealer price was lowered 0.5 cent per gallon December 15 at Minneapolis, Minn., and the quotation to the same trade at St. Joseph, Mo., was reduced 0.7 cent December 22.

Standard Oil Co. of Nebraska reduced the tank-wagon price of kerosene 0.7 cent per gallon at North Platte, Neb., effective December 5.

EQUIPMENT PROGRESS...

Dresser Acquires Bovaird & Seyfang Company

Of prime interest to the oil and gas industry is the announcement by Dresser Manufacturing Co. of the acquisition of Bovaird & Seyfang Manufacturing Co. of Bradford, Pa., as a wholly-owned subsidiary.

The chief motive in acquiring Bovaird & Seyfang was to obtain extra manufacturing capacity for Clark Brothers of Olean, a Dresser subsidiary, whose expected business during the period of the war boom is far in excess of its manufacturing capacity. Bovaird & Seyfang has manufacturing facilities of 147,000 sq. ft. of plant and buildings, equipped with heavy machine tools, a boiler shop, and grey iron foundry.

Thus Bovaird & Seyfang will help in the Clark Bros. production of engines and compressor for refinery expansion of aviation-gasoline production, for oil-conservation projects, in chemical defense plants, and other regular Clark Bros. markets.

Bovaird & Seyfang was founded in 1874 as a forge shop manufacturing oil and gas-field equipment. The company was incorporated in 1891. From the early 1900's until 1920, its chief activities were devoted to the manufacture of steam engines and boilers. Today its main products, sold almost entirely in the Bradford field, are gas engines, diesel engines, gear and band-wheel pumping powers, drilling and fishing tools, tanks, and pumping jacks. These products, together with a line of popular gas and oil-well supplies, are and will continue to be distributed through their one local store in Bradford.

Subsidiaries of Dresser Manufacturing Co., in addition to Bovaird & Seyfang, now include: The Bryant Heater Co. of Cleveland, maker of gas-fired heating and air-conditioning equipment; Clark Bros., Inc., of Olean, manufacturer of gas-driven engines and power-driven compressors; Pacific Pump Works of Huntington Park, Calif., a leader in centrifugal, turbine, and plunger pumps for specialized purposes, and Dresser Manufacturing Co., Ltd., of Toronto, Ont., Canada. The parent company at Bradford is the world's largest producer of pipe couplings and pipe-line repair devices.

New Vice President Named For Raybestos-Manhattan

Sumner Simpson, president of Raybestos-Manhattan, Inc., recently announced the appointment of F. L. Curtis, general manager of the Manhattan Rubber Manufacturing Division, as vice president of Raybestos-Manhattan, Inc. Mr. Curtis has been associated with the company since the beginning in 1893. He will continue as treasurer of Raybestos-Manhattan, Inc.

H. E. Smith, assistant general manager of the Manhattan division, was appointed to succeed Mr. Curtis as general manager. J. H. Matthews, assistant factory manager, is now assistant general manager. Both Mr. Smith and Mr. Matthews have been with the Manhattan division for many years.

CRUTCHER-ROLFS-CUMMINGS CLEANING AND PRIMING MACHINE . . .

The new W-K-M Model C-R-C pipe cleaning and priming machine, developed by J. D. Cummings and M. P. Laurent, is now available exclusively through Crutchers-Rolfs-Cummings Co., of Houston, Tex.

The accompanying photograph shows one of the machines in operation near Opie, Kans. Note that the design of this machine is entirely new and incorporates steel brushes which rotate around the periphery of the pipe. The machine travels along the pipe on four rubber rollers to prevent maring of pipe surface. It is provided with 16 speeds forward, ranging from 3 ft. to 100 ft. per minute. The weight of the 100-hp. prime mover is carried on a single rubber-tired wheel which rolls on the ground.

Complete details may be had by writing Crutcher-Rolfs-Cummings Co., Esperson Building, Houston, Tex.

Engine-Driven Arc Welder Announced by Lincoln

A new engine-driven arc welder which is specially designed for job welding and garage work and which embodies a new system of engine-speed control for maximum fuel economy and minimum engine wear, is announced by the Lincoln Electric Co., Cleveland, Ohio. The new welder is reported priced lower than the average shop would expect to pay for a satisfactory "build your own" outfit.

Of 200-amp. size this new Lincoln unit is engineered for profitable welding applications of all types and sizes. With a current range of 40 to 250 amp., the machine can be used for the welding of light gage metal, for the repair of cast iron parts such as engine blocks, for fabrication of machine parts and structures of many kinds, and for hard-facing of worn parts. Of direct current type, it can weld effectively practically all metals and alloys with bare or shielded arc type electrodes or with the carbon arc where desirable. Its compactness and light weight make it readily portable and hence suitable for work in remote locations as well as those applications which are readily accessible.

The machine's self-indicating voltage control (job selector) and current control make it easy for the operator to select any type of arc and any arc intensity to suit the job. They provide continuous selection throughout the range.

The "job selector" is located on the right-hand side of the control panel with the dial graduated to show the open circuit voltage setting that may be obtained. This control directly varies the speed of the engine from 1,800 to 1,400 for welding duty and thus gives very accurate control of the open circuit voltage. In addition, this control may be used to bring the engine to an idling speed of around 900 r.p.m.

TRADE LITERATURE

PROTECTIVE COATINGS, INC., 10391 Northlawn, Detroit, Mich.—A booklet giving detailed and essential information about the Tocol line of protective coatings for raw materials and equipment of all kinds.

BROWN INSTRUMENT CO., Philadelphia, Pa.—Catalog No. 9004, Brown Resistance Thermometers, which are ideal for measuring and controlling relatively low temperatures with an extremely high degree of accuracy.

CORE LABORATORIES, INC., Santa Fe Building, Dallas, Tex.—A sample report of a bottom-hole sample analysis which the company offers for the study of pressure-volume-temperature relations and analysis of reservoir fluids.

HOBART TRADE SCHOOL, INC., Troy, Ohio.—"Practical Arc Welding," a textbook by W. J. Chaffee, 516 pages, 512 illustrations, copyright 1942. Part 1 in the book is devoted to general welding information. Parts 2 and 3 of the textbook are devoted to the complete series of arc-welding lessons exactly as they are offered in the famed Hobart Trade School. Parts 4 and 5 contain a complete dictionary of welding terms and 20 pages of helpful tabular data for operators and designers. The handbook also has an eight-page cross reference index for the reader's convenience.

OIL WELL SUPPLY CO., Dallas, Tex.—Three new descriptive bulletins: TC-5A twin-crank pumping unit; TC-5H and TC-8 twin-crank pumping units, and SC-12A and SC-17A single-crank pumping units. The SC-12A and SC-17A pumping units are new additions to the extensive line of surface pumping machinery.

B & W, INC., Houston, Tex., and Long Beach, Calif.—"The Guide to Successful Completions," an eight-page bulletin, consisting principally of an article reprint, "Casing Movement While Cementing," by Bruce Barkis and Kenneth Wright.

AMONG EQUIPMENT MEN...

Jones & Laughlin Sets Up District Office at Tulsa

The appointment of R. J. Woods, Jr., as district sales manager and the creation of a new district sales office in Tulsa, was announced by the Jones & Laughlin Steel Corp., Pittsburgh. The importance of the Tulsa territory prompted the company to change Tulsa from a suboffice of the Memphis district which it has been since May 1940 to a full district sales office.

R. J. WOODS, JR.

Mr. Woods has been a sales engineer in the Memphis district office since 1935 and prior to that had been with the Wilson Weesner Wilkinson Co. in Nashville and Knoxville, Tenn., and Atlanta, Ga., in a similar capacity. He was graduated from Vanderbilt University in 1928.

Other changes involving J&L district sales offices and managers include the appointment of John B. DeWolf, formerly district sales manager in New York, as district sales manager in Washington, D. C.; the appointment of S. A. Fuller, formerly district sales manager in Chicago, as district sales manager in New York, to succeed Mr. DeWolf; the appointment of Earnest W. Harwell, formerly district sales manager in Memphis, Tenn., as district sales manager in Chicago, to succeed Mr. Fuller; and the appointment of E. E. Hoehle, formerly assistant district sales manager in Memphis, Tenn., as district sales manager in that city to succeed Mr. Harwell.

Supervisor of Branches Named By Chicago Pneumatic

The appointment of J. Rogers Davis as supervisor of branches, newly created office of the Chicago Pneumatic Tool Co., was announced by H. Arnold Jackson, president of the company, at its headquarters, 6 East Forty-fourth Street. Mr. Davis joined the company in December and will assist in the sales activities of Chicago Pneumatic's 21 district and subdistrict offices. He will standardize sales office procedure and coordinate sales plans and quotas with branch and division managers.

Mr. Davis' many years experience with a large equipment manufacturer make him well qualified to fill this new post. Among his various activities, he was an office manager in Philadelphia—later, operating from New York, he systematized operations of all branch offices and warehouses for an entire organization. An industrial engineer, he also has had broad experience in the preparation of catalogs and sales manuals.

Personnel Is Reorganized In Haering Expansion

D. W. Haering & Co., Inc., with general offices in the Engineering Building, in Chicago, Ill., has doubled the space occupied since moving to these quarters last July 1. In addition complete new service laboratory facilities have been installed in the plant at 2308 South Winchester Avenue, in Chicago, and the laboratory facilities at West Monroe Street in the same city are now devoted exclusively to research.

Recent personnel changes and additions include the promotion of H. C. Daggett, formerly eastern division manager, to the position of general sales manager. Appointment of Nat Bailey, formerly chief chemist of Waukegan Coke & Chemical Co., as research chemist in Chicago, and addition of Tom Palen and Jarvis Johnson, chemists, in the Chicago service laboratory.

Dr. Dyer B. Lake has been placed in charge of the New York service laboratory. F. H. Wright has been promoted to manager of the Chicago Winchester Avenue unit, and O. R. Borngesser placed in charge of the Wichita service laboratory. D. R. Walser has been promoted to Chicago district managership, C. E. Erb to Wichita, Kans., district manager, and E. H. Snyder to Houston, Tex., as district manager.

George Perry has been appointed West Coast manager, and P. A. Dobson is now in charge of Los Angeles, Calif., territory, and Joseph Paulson is in charge of Portland, Ore., and surrounding area. G. Knight-Smith has been placed in Dallas, Tex.; E. M. Lloyd in Baltimore, Md.; Walter Beschenbossel in Minneapolis, Minn., and R. C. Rohrdanz, superintendent of Shelley Refining Co., has returned to active service for Haering in the Houston territory.

Frank W. Mrazek has been placed in charge of New Orleans, La., and W. S. Nathan has been added to the Milwaukee, Wis., staff. C. French and G. Conrow have been added to the Chicago service staff. W. F. Renner of Red Springs, N. C., has been placed in charge of North Carolina operations.

Allis-Chalmers Elects Chairman and President

At a meeting of the board of directors of Allis-Chalmers Manufacturing Co. in Milwaukee, Wis. Max W. Babb, president of the company, was elected chairman of the board of directors and W. C. Buchanan, a director and member of the executive committee, was elected to succeed him as company president.

MAX W. BABB

Mr. Buchanan has for the past 6 years devoted a substantial portion of his time to the Globe Steel Tubes Co., in Milwaukee, of which he is president, and in which capacity he will continue. Mr. Babb in becoming chairman of the board will fill the position formerly occupied by the late Gen. Otto H. Falk, which has been vacant since his death in 1940.

Timken Advances Buyer to Assistant Department Head

The officials of the Timken Roller Bearing Co. announced the appointment of Dwight A. Bessmer to the position of assistant director of purchases.

Mr. Bessmer joined the Timken company shortly after his graduation from the Michigan School of Mines in 1929. After completing a special engineering training course, he served as automotive sales engineer in the Detroit territory for 6 years. Eighteen months prior to his appointment as assistant director of purchasers, he entered the purchasing department as a buyer.

The company also announced the transfer of F. H. Lindus to sales promotion work located at Canton, Ohio. He will contact users of bearings regarding mutual sales and merchandising problems.

BUSINESS NOTES

Reed Roller Bit Co., Houston, Tex., has moved its warehouse from the K.M.A. field to 700 Virginia Street, Wichita Falls, Tex. The new warehouse is manned by the same personnel that has served that section of the oil world in the past.

Lane-Wells Co., 5610 South Soto Street., Los Angeles, Calif., has moved its Illinois district headquarters from Mount Carmel to Olney, Ill. The new location is 302 West Main St.

Security of East Indian Oil Important to Allied Victory

(Continued from Page 16)

Since the output of its fields and refineries far exceeds internal requirements, the Netherlands East Indies are large exporters of oil. They have suffered as a result of the war and exports in the first half of 1941 were down to 21,820,000 bbl., including 3,200,000 bbl. of crude oil, against 23,938,000 bbl., including 644,000 bbl. of crude oil, in the same period of 1940. Oil from the Dutch East Indies is normally exported to every country in the western Pacific, to many South African and Indian Ocean countries, and even to the United States and Europe. For this reason, loss of this oil would have far-flung effects. Australia and the Philippines are major markets under normal conditions though an absolutely accurate picture is not available since about 26 per cent of the exports are first sent to the neighboring islands of Bintan Riouw and Samboe in the Gulf of Singapore and Sabang, northwest of Sumatra, for storage and transshipment. However, there are a number of other points to which Dutch East Indian oil is shipped direct as the accompanying table on exports taken from the latest available report, shows. This report is for the first quarter of 1941.

NETHERLANDS EAST INDIES EXPORTS
FIRST QUARTER 1941

Destination—	Bbl.
United States	75,000
South America	6,000
Balkan States	94,000
United Kingdom	141,000
British Malaya	444,000
Burma	11,000
Ceylon	136,000
China	433,000
Chosen	51,000
French Indo-China	22,000
Hongkong	140,000
British India	28,000
Japan and Formosa	1,087,000
Penang	2,000
Philippine Islands	1,025,000
Poeloe Bintan Riouw*	1,318,000
Poeloe Sabang†	39,000
Poeloe Samboe*	1,681,000
Singapore	1,418,000
Thailand	5,000
British East Africa	16,000
Polyneisa, Micronesia	73,000
Portuguese East Africa	89,000
Union of South Africa	539,000
Australia	1,857,000
New Zealand	429,000
Other countries	8,000
Supplies of vessels	650,000
Total	11,817,000

*Islands in the Gulf of Singapore used for storage and transshipment. †Island northwest of Sumatra used for storage and transshipment.

From a world standpoint, the oil of the southwest Pacific archipelago is comparatively inconsequential. Estimates of 1941 production show that it was but 2.3 per cent of the total. However, it is of extreme importance from a local standpoint. Oil is produced elsewhere in what may be termed the western Pacific area only in Burma, Taiwan, Japan and in the Russo-Jap island of Sakhalin. All western Pacific production in 1941 was approximately 75,000,000 bbl. and 80 per cent of it was produced in the Netherlands and British East Indies. Loss of this oil would necessitate changes in world trade since it would be necessary to supply its markets from other sources, putting a heavy burden on the producing and transportation facilities of the rest of the world.

No Netherlands East Indies oil has gone to Japan since the abrogation of the contract made in the fall of 1940. Under this contract, made at Japanese insistence and approved by the Batavian Government, B.P.M. and N.K.P.M. were to supply Japan with 5,931,000 bbl. of refined products and 4,259,000 bbl. of crude oil. Japan insisted on obtaining aviation gasoline but the Dutch reserved their entire output of this essential war material for herself and her allies. When the contract was abrogated last year, less than half of the quantities had been supplied.

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Paul Brown Bldg., St. Louis, Mo.

FOR SALE: Oil and gas leases, small production, drilling propositions, fluorspar and rock asphalt deposits. Reports and maps furnished on request. W. P. Harley, Bowling Green, Ky.

A REAL opportunity for 1942: Fifty acres, new lease, English survey, Joaquin field, Shelby County. Fifty acres, new lease, less than one mile from producing well, Shelbyville field. Write C. A. Parker, Box 451, Center, Texas.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

NEW Ordovician wildcat starting. Close in leases $1 to $2 per acre, chances for quick money. E. CROFT, PROCTOR, TEX.

WESTERN Kans. & Eastern Colo. 100,000 acres for lease or sale. Terms. Write Owner, John W. Baughman, Liberal, Kans.

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OIL OPERATORS ATTENTION: 10,000 acre drilling block R.M. area, Shallow and deep oil. Will deal for drilling percentage. Box A-823, The Oil and Gas Journal, Tulsa

CONTROL offset McClosky production. 120-acre lease, 7/8 oil and gas, Wayne County. Devonian test, and $1,000 Cash. 2,000-acre block Edgar County, 1,000 acres Coles County, and 1,000 acres Cumberland County, want test. S. J. Burkitt, Mowequa, Illinois.

HAVE good drilling block up to 4000 acres in Shelby County ready to go. Write immediately for details. C. A. Parker, Box 451, Center, Texas.

FOREST City Basin, 3,000-acre block, near McLouth; Will farm out. Harry Haynes, Grantville, Kansas.

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Engineers & Contractors
OIL REFINERIES
BLAST FURNACES
STEEL PLANTS
2300 CHESTER AVENUE
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WANTED: Electrical Designing Draftsman specify materials, equipment and layout oil refinery distribution. Power and lighting circuits. Mostly classed one group D work. Present outlook permanent. Reply to P.O. Box 2527, Houston, Texas.

MANUFACTURERS' Representatives known to the best oil field trade desired for quality specialties now being sold to the best oil field trade, repeat items, excellent commissions, exclusive territories open. Box A-811, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Mechanical Draftsman for apparatus design Research Laboratory. Location—Tulsa, Oklahoma. Box A-835, The Oil and Gas Journal, Tulsa, Okla.

DESIGNING DRAFTSMAN
For oil refinery and chemical plant construction by large New York concern. War work. Time and a half for over 40 hours. Average 12 hours weekly overtime. Reply giving age, education, experience, include "snapshot" (non-returnable). Box A-834, The Oil and Gas Journal, 415 Lexington Avenue, New York City.

Situations Wanted

PRODUCTION OR FIELD SUPERINTENDENT: Age forty-seven. Eighteen years with two major companies. Thoroughly experienced in all production methods and rotary and cable tool drilling. Good organizer with broad knowledge of field operations. Can lower your development expense and lifting cost. Box A-800, The Oil and Gas Journal, Tulsa, Okla.

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Highly trained and capable accountant desires connection as controller with a progressive organization requiring efficient office and accounting procedures, constructive operating statements, and income and general tax counsel. Consideration will be given only to position demanding outstanding ability.

Box A-820
The Oil and Gas Journal
Tulsa, Oklahoma.

GAS and Mechanical Engineer, 36, married, Holland-Dutch nationality, first papers, S B degree, 13 years' experience with major company in South America, thoroughly familiar with combustion engines, compressors and pipe line work and with gas and gasoline extraction plants, desires position as Gas plant superintendent or engineer. Box A-833, The Oil and Gas Journal, Tulsa, Oklahoma.

OIL Experienced Male Secretary, Stenographer, age 29, draft classification II-A, now employed, wishes change. Experience includes oil refining and production, land leases, traffic, sales promotion, collection. Can manage all details of office routine. Prefer capacity as private secretary. Can go anywhere and will travel. Salary discussed in correspondence or interview. Please reply to Box A-832, The Oil and Gas Journal, Tulsa, Okla.

PETROLEUM and Natural Gas Engineer, experienced in production schedules, costs, equipment design, inspection, purchasing, technical and legal investigations. Widely traveled, good contact man. Box A-831, The Oil and Gas Journal, Tulsa, Okla.

PRODUCTION SUPERINTENDENT desires connection with reliable company. 15 years' experience in oil business; 10 years as Production Superintendent. Permanent location preferred. Box A-830, The Oil and Gas Journal, Tulsa, Okla.

Mailing Lists

ROYALTY owners, Oil investors, Unit holders, Stockholders, Operating personnel of oil industry. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla.

Financing

LOANS made on producing oil, gas and mineral lands. New York Note & Share Corp., 109 Broad St., New York City.

Equipment Wanted

HIGHEST cash prices paid for entire plants or individual production tools, milling machines, shapers, drill-presses, lathes, punch presses, electrical equipment and motors. Write us and a representative will call. COOK COUNTY MACHINERY CO., 1132 W. Lake St., Chicago, Ill.

WANTED one industrial gas engine in good repair. 110 or over H.P. State condition, make, model and price. Write Box 356, Bradford, Pa.

CASH for your surplus mechanical or pressure steel tubing, pipe, boiler tubes, used or new, regardless of quantity and location. Send us your list of surplus valves, fittings, tools and supplies you have for sale. Quinn & Co., Box 4503, Atlanta, Georgia.

For Sale—Equipment

HIGH Pressure Absorber, 30" x 34' 0", 450-lb. test, Tulsa Type, 16 trays and 3 mist extractors. Will furnish complete drawings and specifications. W. S. Smith, 523 Thompson Bldg., Phone 2-5473, Tulsa.

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2—Sections, C-240, single pass, bent tube, 88—1" OD X 18 ga. X 20' Admiralty, 125# pressure, 450° F., 470 sq. ft. surface ea.

1—Section, X-240, 3 pass, bent tube, 138—1" OD X 18 ga. X 20' Admiralty, 125# pressure, 450° F., 746 sq. ft. surface.

5—Sections, E-240, 8 pass, bent tube, retarders in tubes with ferrules, 16—1" OD X 18 ga. X 20' Admiralty, 125# pressure, 450° F., 87.3 sq. ft. ea.

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
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Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

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Used Rotary Drilling Rigs

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1—Oilwell electric rotary with Hild drive complete with 5800 feet 4½ O.D. interior upset seamless drill pipe.

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25 K.W. and 40 K.W. Gas Engines, 220 volts. D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.

Terms to suit.

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All sizes for pumping and drilling.
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FOR SALE — Westinghouse Flexarc Welder, 300 Amp, direct connected to 4 Cyl. Buda Motor, Skid mounted with Acetylene Generator. ACME OIL TOOL COMPANY—Oklahoma City, Okla.

FOR SALE: Mast Type casing pulling machine, 50 ft. mast, complete drawworks, perfect working shape. Degen Pipe & Supply Co., 401 N. Boston, Tulsa, Okla.

FOR SALE at Oklahoma City: 5—Martin 8 Steel Rim Wood Wheels, Special High Speed, 25-30 Ton, Wagons with tractor hitch, $400.00 each. Patridge. Cities Service Oil Company, Bartlesville, Okla.

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FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

FOR SALE: 5 x 12 Oil Well Power Slush Pump with 100 H.P. Waukesha Motor. Melton Supply Co., Seminole, Okla

FOR SALE

Skimming and Cracking Plant Equipment
Pumps—Fittings—Towers, Etc.
Write P. O. Box 218 or Phone 99.
Nathan Pipe & Supply Co., Inc.
Overton, Texas.

FOR SALE — ABSORBERS — 2 — 72" x 30' Southwestern Make 16 trays 75# W.P. W. S. Smith, 523 Thompson Bldg., Phone 2-5473, Tulsa, Okla.

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From

RODESSA REFINERY, Shreveport, La.

5,000 Bbl. CRACKING FURNACE, Alcorn type, 34' 0" x 36' 4" with Laclede-Christi suspended roof, arch, and wall, 4" common brick sheathing (air cooled side walls and floor) 12" air space between suspended walls and common brick. Transite roof and alloy tube sheets. Gas fired with 24 No. 16 Mettler burners. Contains the following alloy tubes: 218—3½" OD x 2⅝" ID Croloy DM tubes—1.00-1.50% Cr., 0.45-0.65% Mo., 31' 6" long. 182—3½" x 6¼" Key Series 7000 K4B headers, 2—3½" x 21" Key Series 7000 K4B headers, 8—3½" Key Series 7000 K4B corner fittings, 30—3½" extra heavy fittings, seamless weld end return bends.

WILL BE SOLD COMPLETE OR IN PARTS.

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120—3½" x 2⅝" ID Croloy tubes—Composition same as above.
80—3½" x 6¼" Key Series 7000 K4B headers.
9—3½" Key Series 7000 K4B corner fittings.
34—3½" x 6¼" Beaird Screw type C. S. headers.
2—2½" Beaird Screw type C. S. corner fittings.

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Sucker Rods, once run, in Okla. City field. Complete stock ¾", ⅞" and 1", available in truck loads of 10,000 ft. or more. These rods all alloyed. Delivered at reasonable point. Stock carried at Oklahoma City and Wichita, Kan.

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FOR SALE: International Diesel Motor U.D.-18. Almost new, complete with out board bearing, pulley and belts. Adair-Morton Company, Wichita, Kansas.

FOR SALE: Direct to operators for cash. No brokers. Casing, line pipe, fittings, tubing, rods, tanks, pull machines, powers, service masts, engines. C. T. Boone, Emporia, Kansas.

FOR SALE: 1—#25 Southwestern Distillation Unit completely overhauled with or without pumps and absorber, will make 5,000 gal. gasoline per day. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla., Phone 2-5473.

FOR SALE—5000' of 4½" Flush Joint Hydril Drill Pipe, Box 239, Abilene, Texas.

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Tele—Cort. 7-4676

FOR SALE: 125 H.P. 200 W.P. Broderick Boiler, Code Condition, $975. Melton Supply Co., Seminole, Okla.

FOR SALE OR RENT: Gas engine powered Rotary Drilling Rig complete. Suitable for 4,500' drilling. Box 1360, Phone 312, Seminole, Okla.

FOR SALE at Oklahoma City: A quantity of repaired and unrepaired duplex piston steam pumps, 6 x 4 x 6 and 10 x 3½ or 4½ x 10. Cities Service Oil Co., Bartlesville, Okla.

FOR SALE

20,000' 12¾" O.D. lapweld pipe.
5,000' 7", 24 lb. seamless casing.
5,000' 2½" seamless upset tubing.
300 sets 3" tool joints, full hole.

Wire, write, or phone the

Louisiana Iron & Supply Company
Shreveport, Louisiana

FOR SALE: Viking ET 4" high pressure rotary pump with 2¾ to 1 speed reducing gear. One 4" Worthington high pressure rotary pump. Miscellaneous lot pumps and electric motors with starters. One 6" deep well turbine pump, 250' of column and shaft, electric motor or belt head.

CORKEN PUMP & MACHINERY CO.
206 E. Grand Ave., Oklahoma City, Okla.

FOR SALE at Oklahoma City: Large quantity 65, 70, 75 and 85 hp. oil field boilers, repaired and unrepaired. Cities Service Oil Co., Bartlesville, Okla.

FOR SALE

1—Complete Std. drilling rig consisting of:
1—122' Emsco Angle Iron Derrick with 5" re-legs, Steel band wheel, steel bull wheel, steel calf wheel, Parkersburg sand reel.
1—Steel front with steel walking beam.
1—13¼ x 16 Reid twin diesel engine with OCS Jack shaft and clutch mounted on skids.

Above in first class condition having drilled but one well 6500' deep.

Also 1—122' angle iron used Lee C. Moore steel derrick.

FT. WORTH PIPE & SUPPLY CO.
Ft. Worth, Tex., Phone 2-1204.

FOR SALE—Type XB Ingersoll-Rand 12" x 5½" x 14" Air Compressor, Belt Driven, with 50 HP 220-440 V Howell 3 Phase Induction Motor, and 3' 9" OD x 12' 8" Long H1 Pressure Air Tank, 1500 lb. Niles Bement Air Hammer, complete.

ACME OIL TOOL COMPANY
Oklahoma City, Okla.

FOR SALE—GAS COOLERS: 2—480'-240' Southwestern make low pressure completely overhauled $1.00 per sq. ft. W. S. Smith, 523 Thompson Bldg., Tulsa, Okla. Phone 2-5473.

BENTONITE

To mud firms, users, processors and blenders of rotary drilling mud, for highly colloidal Eastern Wyoming type of bentonite, crushed and dried to specification ready for fine grinding, apply to Eastern Wyoming Bentonite Company, Moorcroft, Wyoming. No brokers.

FOR SALE at Oklahoma City: 1—100 H.P. Kewanee 200# W.P. oil field type boiler, Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Pressure Vessels handling 100 pounds working pressure 8' diameters 31' 8" lengths. Rectangular tanks capacity 25,000 gallons and 40,000 gallons each. 26 tons I beams one carload. 12-inch I beams 13' 2" long. 36-inch I beams in 22, 36, 38 foot lengths. Shipments made same day purchased. HARVEY BROS., 706 Rudd, Canon City, Colo.

FOR SALE: 4188' of 6⅝", 24 and 26# Seamless extreme line casing. Critchett & Woods, Olla, Louisiana.

USED EQUIPMENT FOR SALE

1—10 x 4½ x 10 NCTB air compressor with 75 HP General Electric Motor complete.
1—75 HP General Electric motor complete. 440 V. 1100 RPM 3 phase 60 cycle.
3—15/30 HP General Electric motors complete. 440 V. 3 phase 60 cycle.
2—20/50 HP Westinghouse motors complete. 440 V. 575/1160 RPM 3 phase 60 cycle.
1—Sullivan #21 "A" rod core drill w/20' mast 3½" x 5" Gardner-Denver pump all mounted on 1935 V-8 Ford 1½ ton truck. Drill powered by take off from truck motor, 350' "A" type drill rods and miscel. equipment to complete drill ready for operation.
1—Sullivan Improved "N" core drill #NG2703 w/ 3" x 4" Gardner-Denver hydraulic pump powered with 55 HP Buda motor all mounted on steel trucks. 1660' "N" type drill rods, 35' tripod. Misel. bits and tools.

KEMPER, VICKERS PETROLEUM CO.
Wichita, Kansas.

FOR SALE—#5 and #7 Unitized U.T. and Emsco Draw Works. 8300' 4½" Full Hole Drill Pipe. 3—125 H.P. 250# W.P. Broderick Boilers, Pumps and Misc. Drilling Equip. Caminol, Tucker 2141, 112 W. 9th St., Los Angeles, Calif.

FOR SALE: Ft. Worth H Spudder complete with tools, motor and lines. Good condition. Bob Johnson, Box 993, Abilene, Tex.

FOR SALE at Oklahoma City — 1—1930 "35" Allis-Chalmers Crawler Tractor, $400.00. Patridge, Cities Service Oil, Bartlesville, Okla.

Journalisms:

THE Annual Statistical Number is due to appear January 29. Judging by the number of telephoned queries regarding production, reserves, prices and well completions, the oil industry is rapidly becoming more statistically minded all the time. The data presented in the Annual Number will be more complete than ever and are calculated to permit the industry to appraise its present position and what it will have to do in the next year to meet the demands made upon it.

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FRANCIS N. BOSCO, who in this issue contributes a searching analysis of the cost of oil exploration and production in one of Colorado's fields, is a native Coloradan, and holds P.E. and M.P.E. degrees from that state's School of Mines. The former he obtained in 1935. He has been engaged in engineering work since 1930.

After spending a year and a half in East Texas with Shell Oil Co., Inc., Mr. Bosco went to South America where he was junior production engineer for the three northern fields of the Lago Petroleum Co. in Maracaibo basin. After nearly 2 years at this job, he decided to see more of the South American oil possibilities and spent 8 months in charge of an exploration party in Brazil, doing reconnaissance and detail geological work for the Votorantim interests.

Returning to this country in 1940, he made a study of eastern Colorado and as soon as he finished the necessary work for his advanced degree he made geological studies in the Rocky Mountain area for an interested group. For the past 6 months he has been making a study of physical depreciation for Stanolind Oil & Gas Co., an assignment which is nearing completion.

In addition to the current contribution, the author had previously presented an article on Brazilian geology (December 26, 1940) and has had three articles on Venezuela and Brazil published by the Mines Magazine.

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IT is not an unusual occurrence that permission is sought to reprint or otherwise reproduce articles or maps that appear in the Journal. As a matter of facts such requests are quite frequent, and usually we are glad to accommodate. As we were in the instance here cited. This request was on the letterhead of Harvard University, Graduate School of Business Administration, George F. Baker Foundation. We quote:

"I have read with much interest the article in the December 25, 1941, issue of The Oil and Gas Journal by Mr. W. L. Nelson, entitled "Base Stock for 100-Octane Is Available From Many Sources." It occurred to me that this material might be of special value to us in our course in Industrial Mobilization. May we have the privilege of mimeographing this article for distribution to the students of our class?

"Yours truly,

"Horace N. Gilbert,

"Visiting Lecturer on Business Administration."

Permission to reprint the article in the company magazine of an oil company was also sought, and gladly granted. Mr. Nelson, technical editor of the Journal, further discussed the subject of 100-octane fuel in the issues of January 1 and January 8. *C'est la guerre.*

•

NEXT week, in his department, "Technical Questions," Mr. Nelson will discuss an analytical method for the determination of butadiene and other similar diolefins found in petroleum fractions. With the Government earmarking 400 millions for the manufacture of synthetic rubber, this discussion should be unusually timely.

CALENDAR

January

AMERICAN PETROLEUM INSTITUTE, San Joaquin Valley chapter, Standard 11-c Hall, Taft, Calif., January 20.

LIQUEFIED PETROLEUM GAS ASSOCIATION, eastern section, Hotel Pennsylvania, New York. N. Y., January 22-23.

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division annual meeting, Engineers Building, New York, N. Y., February 9-12.

INDUSTRIAL SAFETY SECTION, fourth annual safety conference, Roosevelt Hotel, New Orleans La., February 22-24.

LIQUEFIED PETROLEUM GAS ASSOCIATION, annual convention, Kansas City, Mo., February 23-25.

AMERICAN PETROLEUM INSTITUTE, Division of Production, southwestern district, spring meeting, Adolphus Hotel, Dallas, Tex., February 26-27.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, committee week and spring meeting, Cleveland, Ohio, March 2-5.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners and suppliers exhibit, Hotel Severin, Indianapolis, Ind., March 3-5.

AMERICAN PETROLEUM INSTITUTE, division of production, Pacific Coast district, spring meeting, Biltmore Hotel, Los Angeles, Calif., March 10.

WISCONSIN PETROLEUM ASSOCIATION, annual convention and equipment show, Schroeder Hotel, Milwaukee, Wis., March 18-20.

OKLAHOMA UTILITIES ASSOCIATION, annual convention, Biltmore Hotel, Oklahoma City, Okla., March 23-24.

WESTERN PETROLEUM REFINERS ASSOCIATION, thirtieth annual meeting, New Orleans, La., St. Charles Hotel, March 23-25.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Houston, Tex., March 23-25.

AMERICAN PETROLEUM INSTITUTE, division of production, Mid-Continent district, Mayo Hotel. Tulsa, March 26-27.

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